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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Stories of the Week
Charley's Idea Is Good
Mysteries Behind Price Increases
Federal Reserve Limitations
Summation and Trial Balance
FRB Tries, But Is Hamstrung
Semantemathematics

Stories of the Week

Fancy-fielding Willie Miranda was doghoused by Manager Paul Richards of the Orioles. Why he incurred his manager's displeasuse is unimportant to this story, because none of Miranda's substitutes could carry his glove.

"Yeah," Richards bittered after an agonizing week of shortstop errors, "tomorrow Ringling Brothers will be back in the line-up."

"TV is becoming educational," asserts *Tit-Bits.*

"It is driving some people to read books."

The younger generation doesn't seem so bad until you lose your membership in it.

Charley's Idea Is Good

Role of a company president in designing its products normally is that of passing judgment. It's a rare case when a top management man originates a design feature which is both practical and capable of winning the fancy of consumers. However, that's the story behind a new room air conditioner marketed by the Gibson Refrigerator Div. of Hupp Corp.

Some time ago C. J. Gibson, Jr., president of the 80-year-old appliance firm bearing his name, was impressed with the complaint of a distributor. Conventional patterns for introducing cold air into room spaces were creating an unpleasant contrast of static hot-spots and cold-concentrated zones, this man averred.

Mr. Gibson thought this over, and dreamed up an idea. He suggested to his design staff that hot-spots and cold drafts could be ameliorated by creating a gentle sweep-effect for distributing the cooled air over the entire room area.

His men took the hint. A low-cost oscillator mechanism was devised, and arranged to distribute cooled air evenly around a room — through adjustable horizontal louvers and oscillating vertical louvers. It operated so well that a patent was applied for immediately.

Models embracing Mr. Gib-

(Continued on Page 10, Col. 1)

Damage Suit Charges Conditioner's 'Loud Noises Bar Sleep, Cause Ills'

KANSAS CITY, Mo.—Claiming a neighbor's air conditioning unit caused "loud, unreasonable, unnatural noises and vibrations," a local householder and his wife filed a $10,000 damage suit in Jackson county circuit court here.

Stating in their petition that noises from the unit on the next-door property of Robert S. Hanrahan impaired their "lives, health, and right to peaceably enjoy their property," Mr. and Mrs. J. H. Sutton charged that they were kept from sleeping and were caused to "become tired, worn, and ill from lack of

(Concluded on Back Page, Col. 1)

Text of Mechanical Engineering Bulletin ME-13 appears on page 28. This bulletin, which replaces ME-12, relaxes some of the requirements for air conditioning in FHA-insured homes.

WEATHER

Above Normal Heat Seen In Many Areas

WASHINGTON, D. C. — The U. S. Weather Bureau, in its 30-day outlook for September, foresees above normal temperatures for the mid-Atlantic seaboard, midwest and upper south, the plains states, Texas, northern Louisiana, and the California coast.

Much above normal is forecast by the Weather Bureau in an oval area covering parts of Oklahoma, Arkansas, Missouri, Illinois, Indiana, and Kentucky.

Normal temperatures are seen in strips running through mid-California, across the mid-south and down through part of Louisiana, through nearly all New England and New York, stretching west across Michigan, Wisconsin, southern Minne-

(Concluded on Page 33, Col. 3)

Seek To Better Frozen Food Handling Ways

WASHINGTON, D. C.—A 15-man all-industry Task Force has been announced by the National Association of Frozen Food Packers to work on ways and means of obtaining improved handling of frozen foods from packer to consumer.

Sterling B. Doughty, NAFFP president and chairman of the Task Force, announced 100% acceptance of invitations to participate from all industries involved in the movement of the products.

"Such complete acceptance is the surest indication that the aims of the Task Force will be achieved," Doughty said. "It proves that everyone who has a stake in frozen foods is aware that mishandling does exist, that it is having a detrimental effect on industry expansion, and that

(Concluded on Page 33, Col. 1)

Compressor Shipments for Cars Up 82%

Auto Unit Volume Hits 47,291 In May

WASHINGTON, D. C.—Manufacturers' shipments of compressor bodies designed for automobile air conditioning use were the highlight of the Air-Conditioning & Refrigeration Institute's monthly report on compressor shipments again in May, showing a gain of 82% over shipments in May a year ago.

Shipments of automotive-type compressors in May this year totaled 47,291, compared with 25,905 in May, 1956. For the first five months this year, automotive-type compressors shipped numbered 257,603, against shipments in the comparable period last year of 140,525.

Other sizeable gains were shown by shipments of 1 and 2-hp. compressor bodies for the five-month period, with decreases registered in shipments of all fractional horsepower compressors. The figures released by ARI do not include compressors used in household refrigerators.

The greatest gain was

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Copper Makers Slash Prices To 27¢ a Lb.

NEW YORK CITY—All of the big three copper producers again slashed their price by 1½ cents a pound to 27 cents, the lowest quotation in over 4½ years.

Phelps Dodge Corp., second largest producer, led the price cut with Kennecott Copper Corp. following suit quickly. Anaconda Co. followed in its action shortly. The former 28½ cent price had been in effect since Aug. 6 when it was reduced from 29¼ cents.

Further price weakness in the custom smelter quotation and the London market preceded the price drop. Custom firms cut

(Concluded on Back Page, Col. 5)

Stubnitz Greene To Acquire Quincy

ADRIAN, Mich. — Quincy Products Co. of Quincy, Mich., manufacturer of condensers for the refrigeration field, will become a division of Stubnitz Greene Corp. here under arrangements now in the process of completion, the latter firm announced.

The acquisition will bring together one of the important manufacturers of condensers and one of the largest manufacturers of cushion springs for automobiles, the announcement said.

Stubnitz Greene is experienced in handling steel, wire, and tube, and is a recognized expert in the fabrication of parts made from these products, it was stated. The company entered the refrigeration field several years

(Concluded on Page 33, Col. 5)

12 Freezer Mfrs. To Show at Sept. 15 Frozen Food Group's Convention

ELIZABETHTOWN, Pa. — A round dozen of home freezer manufacturers will show their latest models at the 18th annual convention of the National Institute of Locker & Freezer Provisioners next week.

The food plan and locker operators will gather at the Hotel Leamington in Minneapolis Sept. 15 to 18 to find a "Pot of Gold" in new ideas and techniques.

Some lucky conventioneer will actually go home with a sackful of coins—all he can carry over a specified route.

The freezer manufacturers will comprise a goodly proportion of the 41 suppliers who will display their wares in 70 booths during the three-day convention.

Those scheduled to exhibit are Amana Refrigeration, Inc.; Ben-Hur Mfg. Co.; Hotpoint Co.; Kelvinator Div., American Motors Corp.; Manitowoc Equipment Works; Marquette Appliances; Philco Corp.; Ryan Refrigeration; Sub-Zero Freezer Co.; Tri-State Electric Mfg. Co.; United Refrigerator Co.; and Whirlpool Corp.

Also exhibiting are C. Schmidt Co. and Schaefer, Inc.

Actually NILFP is planning two conventions in one. Food plan operators will attend one series of morning sessions while at the same time locker operators will attend another. Each

(Concluded on Page 33, Col. 4)

Meat Losses Cause USSR Call for More Refrigerators

MOSCOW—*Pravda,* the Communist party newspaper, issued a call recently for more refrigerators.

The paper said that only 180 of the Soviet Union's meat packing plants have refrigeration. It said at least 300,000 tons of refrigeration of commercial and domestic types are needed to reduce losses of meat and other foods.

Barnett Appointed Marsh Sales Mgr.

SKOKIE, Ill.—The officers and directors of Marsh Instrument Co. and affiliates announced the appointment of Robert E. Barnett to the position of sales manager.

R. E. Barnett

Barnett joined the Marsh sales staff in 1941 and was appointed assistant sales manager in 1950.

He attended Armour Institute of Technology and the Central Y.M.C.A. college.

O.A. Sutton To Halt Hotpoint Output

WICHITA, Kan.—O. A. Sutton, president and chairman of the board of The O. A, Sutton Corp., Inc., announced that the company would not produce room air conditioners for Hotpoint Co. in the future.

Sutton stated that the company would concentrate its attention on its own line of "Vornado" automobile, room, and central air conditioners, as well as its private brand accounts. Prospects for the new automobile air conditioners seem particularly bright, he said.

(Concluded on Back Page, Col. 1)

Fedders Distributors To See 1958 Line

NEW YORK CITY—Fedders-Quigan Corp. will introduce its 1958 air conditioner line to distributors at a meeting here on Sept. 9.

All the firm's U. S. wholesalers plus distributors from Havana, Puerto Rico, Panama, and South Africa attending the showing will also hear of advertising and sales promotion plans for the new line. Emphasis was to be given the company's financial plan.

Unilectric Patent Appeal Partially Denied

CHICAGO — United Mfg. & Service Co. of Milwaukee (now Unilectric, Inc.) had its appeal in its 1949 suit against Holwin Corp. here denied by U. S. Court of Appeals, except for future patent royalties due Holwin.

United's complaint asked for declaratory judgment enjoining defendant from charging infringement of U. S. Patent No. 2,460,636 for a self-sealing electric light socket for refrigerator panels.

However, last October Federal Judge Win G. Knoch adjudged defendant's (Holwin) patent valid and that certain of plaintiff's sockets come within the scope of the patent and within the terms of a license agreement between the parties.

The Court of Appeals upheld this ruling. It affirmed payment of past royalties, but disagreed with Judge Knoch's decision that United pay future royalties. The case was remanded to District Court for further proceedings.

Senate Drops Bill Giving FTC Control Over Meat Packers

WASHINGTON, D. C. — The bill designated S-1356, which would give the Federal Trade Commission jurisdiction over business practices of the meat packers, including retailers with meat packing activities, has been dropped temporarily in the Senate rush for adjournment.

Backers of the bill said they would push for approval early next year.

The bill was termed by senators "too controversial" to be handled in the closing days of this session.

Cool Plymouth Showroom

BIRMINGHAM, Ala.—An air conditioned showroom has been opened by Mel Casler Plymouth, Inc., at 2501 Sixth Ave., S.

Du Pont Survey To Measure Commercial, Industrial Air Conditioning Potential

WILMINGTON, Del. — A nationwide survey to measure current penetration and future potential of air conditioning in the commercial-industrial field will be undertaken this fall by the Du Pont Co.

Third in its series of studies of the air conditioning market, the survey will be conducted for the company's "Freon" Products Div. by W. R. Simmons Associates, Inc., of New York City, who plan personal interviews with about 2,700 firms to obtain an accurate and projectable cross-section of business plans. Results should be analyzed and ready for release in November.

Manufacturing plants, office buildings, hotels and motels, retail stores, and public institutions will be included in the survey which, in addition to measuring current usage of air conditioning, is expected to provide the refrigeration industry with valuable information for charting its future product development and marketing plans.

Previous surveys conducted by Du Pont dealt with the markets for room air conditioners and central residential cooling systems.

NARDA Names 12 Regional Chairmen For Liaison Work

CHICAGO — Twelve regional chairmen have been chosen to supplement the board of directors of the National Appliance & Radio-TV Dealers Association at the local level, President Ken Stucky announced.

According to Stucky, the selection of the 12 local chairmen will give NARDA members additional representatives in their own area to whom they can turn for advice and aid.

"Acting as liaison between members in their area and NARDA headquarters, the chairmen will constantly check up on local conditions, finding out from dealers in their district what new pressures are being brought to bear on appliance retailers, and what problems are most disturbing to them," it was explained.

"The chairmen will then present these problems to NARDA headquarters along with recommendations as to how they might be alleviated."

These chairmen will also recommend area dealers who are needed to give NARDA additional strength.

The new chairmen and their areas (same as the Federal Reserve District areas) are:

District #1 (Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island): Frank Murphy, Murphy Electric Co., Bristol, Conn.

District #2 (New York, New Jersey): Morris Levy, Levy Bros. Furniture Co., Niagara Falls, N. Y.

District #3 (Eastern Pennsylvania and Delaware): Robert L. Painter, Chester, Pa.

District #4 (Ohio, western Pennsylvania, eastern Kentucky): William P. Hoermle, Columbus, Ohio.

District #5 (Maryland, Virginia, W. Virginia, North Carolina, District of Columbia): A. H. Warne, Bohman-Warne, Inc., Hagerstown, Md.

District #6 (Georgia, Florida, Mississippi, Alabama, Louisana): Richard A. Palmer, Palmer Tire Co., Macon, Ga.

District #7 (Michigan, Indiana, Illinois, Iowa, Indiana, southern Wisconsin): Earl T. Holst, BRACS, Des Moines, Iowa.

District #8 (Missouri, western Kentucky, Tennessee, Arkansas): Ed Kuehn, Kuehns, Inc., Belleville, Ill.

District #9 (Minnesota, North Dakota, South Dakota, northern Wisconsin): Hardy Rickbeil, Worthington, Minn.

District #10 (Colorado, Wyoming, northern New Mexico, Nebraska, Kansas, Oklahoma): A. Murillo, Hill Electric Co., Inc., Wichita, Kan.

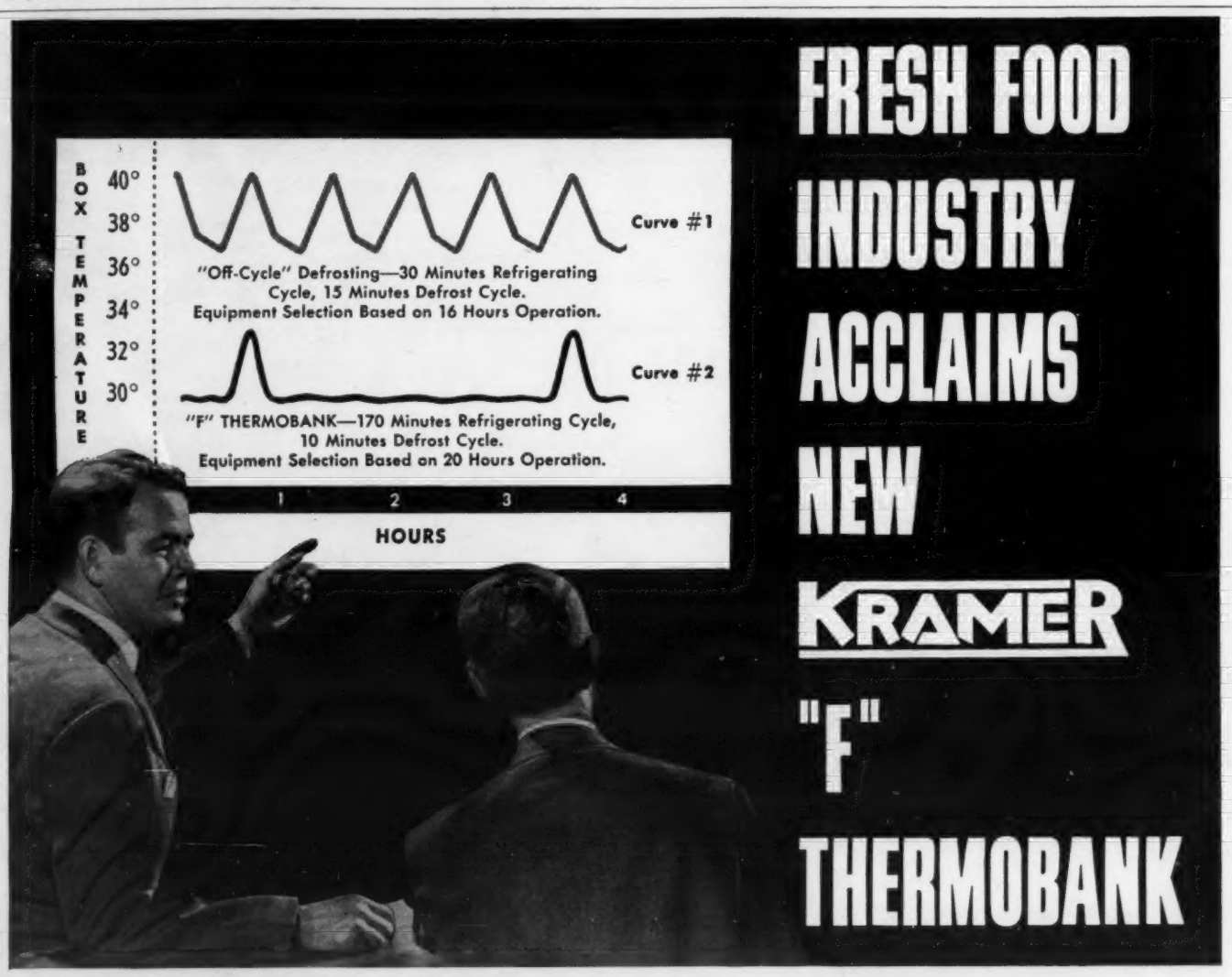
District #11 (southern New Mexico, Texas): Vergal Bourland, Fort Worth, Texas.

District #12 (California, Arizona, Nevada, Utah, Idaho, Oregon, Washington): Carl Hagstrom, General Appliance Co., San Francisco.

Reprints Available

Hermetic Compressor Design, Development, by Henri Soumerai. Only 40¢ each.

Mail this ad with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.



KRAMER UNFOLDS A NEW CONCEPT OF REFRIGERATION APPLICATION FOR FRESH FOOD

To obtain the fullest advantage in the storage of most fresh food, a constant temperature of 30° or 32° must be maintained. Since every defrost cycle results in fluctuations in temperature and humidity, to maintain the best storage conditions the number of defrost periods and the length of each defrost must be reduced to an absolute minimum.

The new "F" THERMOBANK has the *fewest* possible defrost periods and is the only system that will go into a defrost when it is really needed and not before; this is most essential to prevent unnecessary defrost which results in wide temperature and humidity fluctuations in the storage room. (See Curves)

The "F" THERMOBANK is completely defrosted in the shortest possible duration (10 minutes). No other defrost system, regardless of type, can approach this fast defrost, but the rapidity of defrost is indispensable to hold the ideal conditions of 30° or 32°.

Because the "F" THERMOBANK guarantees the fewest and most rapid defrosts, equipment is selected for 20 hours operation. This permits the selection of a smaller compressor and a smaller THERMOBANK system resulting in lower first cost as well as economical operation. When the added benefits of "F" THERMOBANK features such as less waste, longer shelf-life, less dehydration, less mold and bacterial infection, and maintenance of "freshness" during storage, are included in the cost estimate, the "F" THERMOBANK is incomparable in value.

Selection and application of the "F" THERMOBANK are simple. Rapid selection tables covering a wide range of cooler sizes for 30° applications are available.

WRITE FOR BULLETIN TV-380

KRAMER TRENTON CO. • Trenton 5, N.J.

43 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

For more information about products advertised on this page use Information Center, page 20.

Bill Aulsebrook, Manager Quality Control, addressing a production personnel group.

HARDEST MAN TO PLEASE IN EVANSVILLE, INDIANA!

Most quality-control managers are bugs on their subject . . . but our man (Bill Aulsebrook, by name) is a real bear. As part of a continuing educational program, Bill regularly schools all employees on his favorite subject. His latest talk is the best one on quality control we've ever heard. Following are excerpts:

"Building refrigeration compressors is a tough business. It calls for more know-how, more accuracy, more endurance, more skill than most outfits have.

"Compare our product with an automobile engine. You're pretty well satisfied if you drive your auto 50,000 miles before the engine really needs a major overhaul. At forty miles an hour that's 1,250 hours of operation.

"When one of our refrigeration compressors is installed, it runs twelve to sixteen hours a day, every day, every week, every month in the year. It gets 1,250 hours of operation in about three months! Yet, it is expected to last *ten years*, and that's over 50,000 hours—the equivalent of running your car 2,000,000 miles!

"Now, there's another angle that makes this a tough business—that's the necessity angle. If your car battery quits, you can call a cab. If your lawn mower engine won't start, you borrow one from your neighbor. But, if you're running a supermarket and your freezer quits some Saturday night, you've lost several hundred dollars in melted food by Monday morning.

"That's why we must be so precise in producing our compressors. That's why we must hold such close tolerances. That's why it takes continuous checking with the best precision gauges. And, above all, that's why it takes people who are earnestly interested in doing a good job!"

Yes, Bill Aulsebrook is a mighty hard man to please, but we like him that way. It helps us assure you of built-in dependability with every Bendix-Westinghouse compressor. We want your business—a chance to tell our entire story and to submit quotations. Write us here at Evansville for complete information and a prompt visit from one of our regional managers.

EVANSVILLE DIVISION, EVANSVILLE 11, INDIANA.

Export Sales: BENDIX INTERNATIONAL, 205 East 42nd Street, New York, N. Y.

EVANSVILLE DIVISION of

Bendix-Westinghouse

Automotive Air Brake Company

For more information about products advertised on this page use Information Center, page 20.

Northern California RACCA Hears About UA's Thinking, Expectations for Future

SAN FANCISCO — Ways of meeting problems that confront the refrigeration industry were recently discussed here with both United Association business agents of bay area locals and employer members of the Refrigeration & Air Conditioning Contractors Association of Northern California by Owen Kelly, general organizer for the union.

At each meeting he presented UA thinking and expectations. Kelly is assistant to Joseph F. Monahan, UA general organizer, who heads the group's national refrigeration industry activities.

Meetings here are to continue along the line of molding a uniform program for the refrigeration industry in the San Francisco area, it was reported. Another meeting is scheduled in a short time for bay area business agents to discuss uniformity of procedures and many problems facing both employer and union in the refrigeration industry.

Local unions represented at the recent meeting with Kelly, listed alphabetically: Alameda county local 444, Contra Costa local 159, Oakland local 342, Sacramento local 447, San Francisco local 38, San Mateo local 467, Santa Clara county, San Jose, local 393, Stockton local 492, Vallejo and Napa local 343.

The meeting was a continuation of other meetings that have been held on the subject of refrigeration, it was reported. Monahan had been present at previous meetings, but on this occasion he was unable to be present.

It was understood the next meeting of business agents would be called through the San Francisco local, Joe Mazzola, business manager.

Refrigeration contractors' employes, as well as members working for companies installing automatic controls or control work, should be excluded from complying with a recent resolution about travel cards and transfer cards affecting all other local union members, until a definite policy can be worked out with the general office of UA, it was agreed at a special meeting of the Northern California Pipe Trades Council in Santa Rosa attended by General Organizer Archie Virtue and a good representation of all local unions from northern California.

NEWSY NOTES

'Front-End' Air Conditioner Offered As Optional Accessory on Edsels

DEARBORN, Mich. — Newest car on the market—the Edsel—may or may not be ahead of its time, but it starts out from the beginning abreast of its competition in one respect at least. Air conditioning is offered as an optional accessory, priced at $460 to $470.

Edsel's conditioner is a "front-end" type unit with the evaporator and heater mounted beneath the dash. The compressor is driven through a magnetic clutch.

Temperature control is achieved through a thermostat which cycles the magnetic clutch and thus the compressor.

Air conditioning and heating controls are combined in a single dial. The dial controls a servo unit behind the dash which actuates air dampers and thermostat setting through flexible cables. A separate blower control is provided on the instrument panel.

Conditioned air is delivered to the car interior through adjustable louvers at the base of the windshield.

Tyler Strike Ends—Full Output Resumed

NILES, Mich.—A strike of several weeks' duration by production employes of Tyler Refrigeration Corp. here has ended, and a new labor contract has been signed, extending to Feb. 28, 1960.

The strike was settled following acceptance of a final company offer. Wage rates and certain fringe benefits were the issues involved in the labor dispute.

Full production has been resumed on the Tyler line of commercial refrigerators produced at the plant here, it was announced.

2 Manufacturers Hike Prices

DETROIT—Two producers recently announced price hikes effective this month.

Youngstown Kitchen division of American Standard announced an increase of 10% in its factory prices starting on Sept. 3.

Excluded were the "Jet-Power" dishwasher, food waste disposers, sink fittings, and cabinet tops.

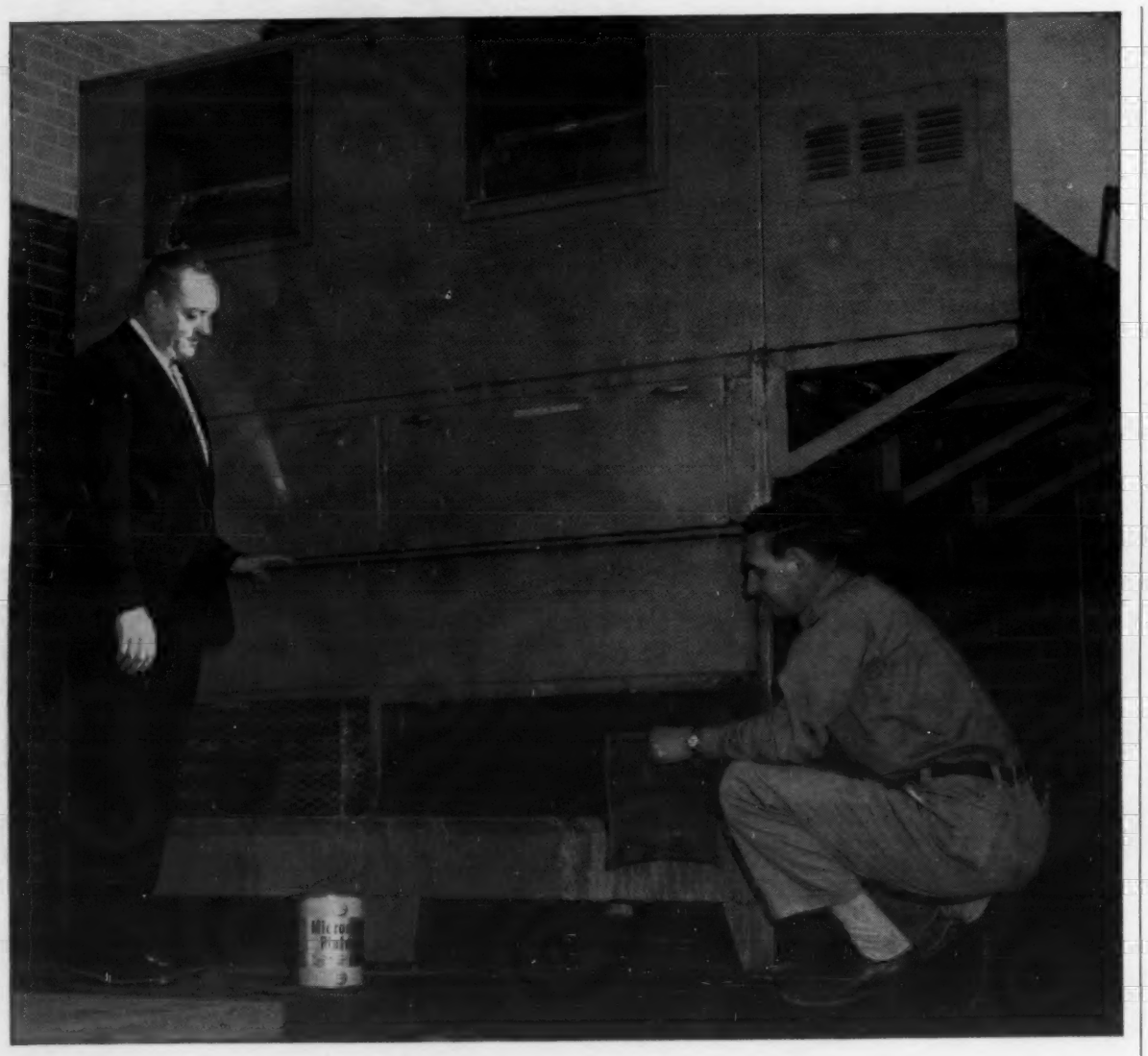
Factory prices on Roper gas ranges will be boosted 6% across the board as of Sept. 16, according to Cy Edwards, merchandising manager. The increase will not effect the firm's line of built-in ranges or clothes dryers, he said.

Room Air Conditioners Lead Knoxville Sales

KNOXVILLE, Tenn. — Air conditioning units outsold all other major household electrical appliances in July in the area serviced by Knoxville Utilities Board.

In a report compiled from 40 dealers, the unit sales of air conditioners were listed at 874 for a total dollar value of $182,749.

Home freezers sold during July totaled 338, with a value of $106,424. Domestic refrigerator sales reached 456, valued at $118,245.



"MICROMET® PLATES have lowered maintenance costs —the condensing units are clean"

Ralph M. Appel, Sales Engineer, Hussmann Distributing Company, Inc., St. Louis, Missouri

The photograph shows Mr. Appel supervising the placement of Micromet Plates in one of their installations, a 40-ton water tower. Micromet Plates have been in use on their installations for over two years with the results noted above.

Mr. Appel has had experience with all of the Calgon® Big 3 products. He reports excellent results with Calgon Scale Remover, and Calgon Algaecide. In common with a great many other refrigeration men, he has every confidence in Calgon products.

Micromet Plates are the easiest and most economical way to keep cooling tower systems free of scale and corrosion. Hung in the water spray in plastic mesh bags, one charge normally lasts a whole season.

When scale has formed in a system, Calgon Scale Remover does a fast, safe job of removal. Action is buffered to protect metals in the system and a built-in pH indicator shows how much to use, and tells when the system is clean. Calgon Algaecide is your best choice for removing algae and slime and keeping growths from forming.

SEE YOUR REFRIGERATION WHOLESALER FOR CALGON'S BIG THREE!

CALGON COMPANY

A DIVISION OF HAGAN CHEMICALS & CONTROLS, INC.
HAGAN BUILDING, PITTSBURGH 30, PENNSYLVANIA
DIVISIONS: CALGON COMPANY, HALL LABORATORIES

GOT VALVE PROBLEMS?
(even if you don't)
Refrigeration
You'll do better with PRIMORE!
There's a Primore Valve for your particular job . . . If there is not, we'll design one. Ask to see our representative.
YOU, TOO, CAN HAVE A FREE CATALOG— JUST ASK FOR IT!
Primore Sales, inc.
2460 S. Main Street • Adrian, Mich.
REFRIGERATION: designing • sales • engineering

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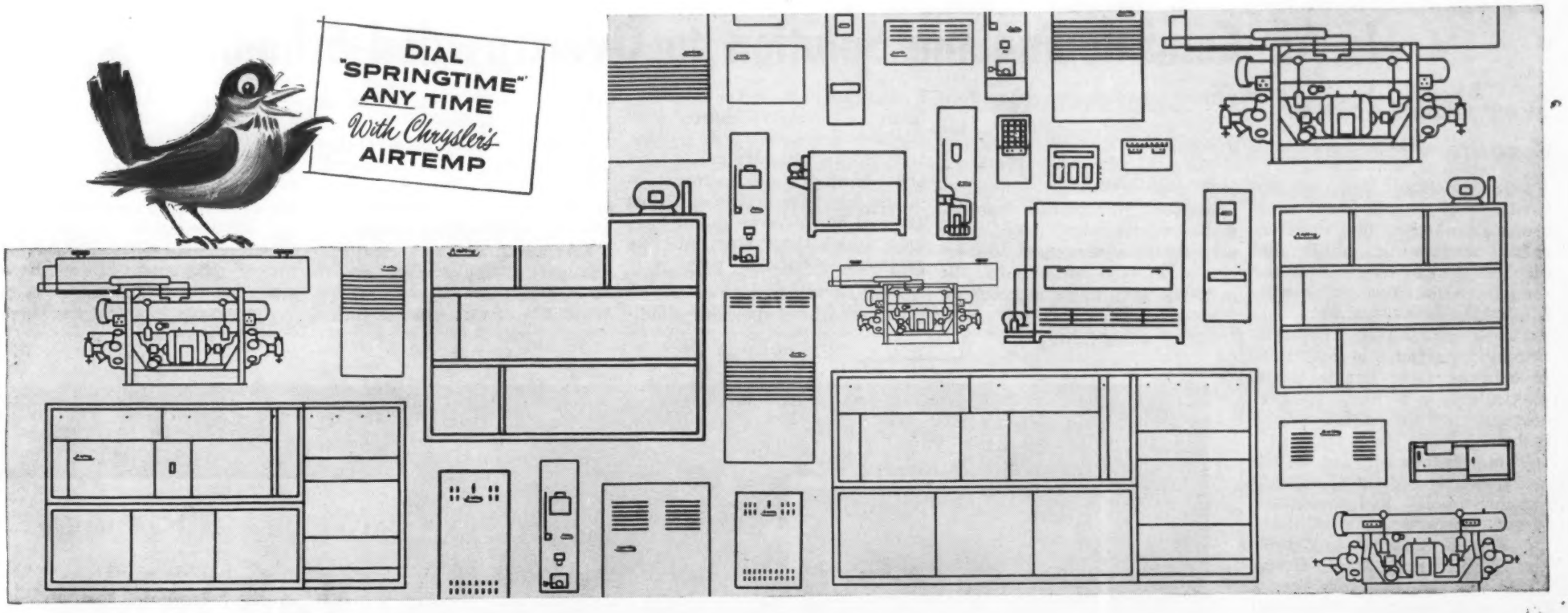


YOU CAN AIR CONDITION ANYTHING WITH Chrysler's AIRTEMP

Airtemp's selection—the broadest in the industry—lets Airtemp dealers air condition *any* home, *any* building.

Whatever your customer needs—waterless or water-cooled—Airtemp has it. This includes central home cooling with or without a matching oil or gas furnace . . . every type of window air conditioner . . . "packaged" and central-station equipment for business and industry . . . even a new automobile air conditioner.

New Air-Cooled "Packaged" Units

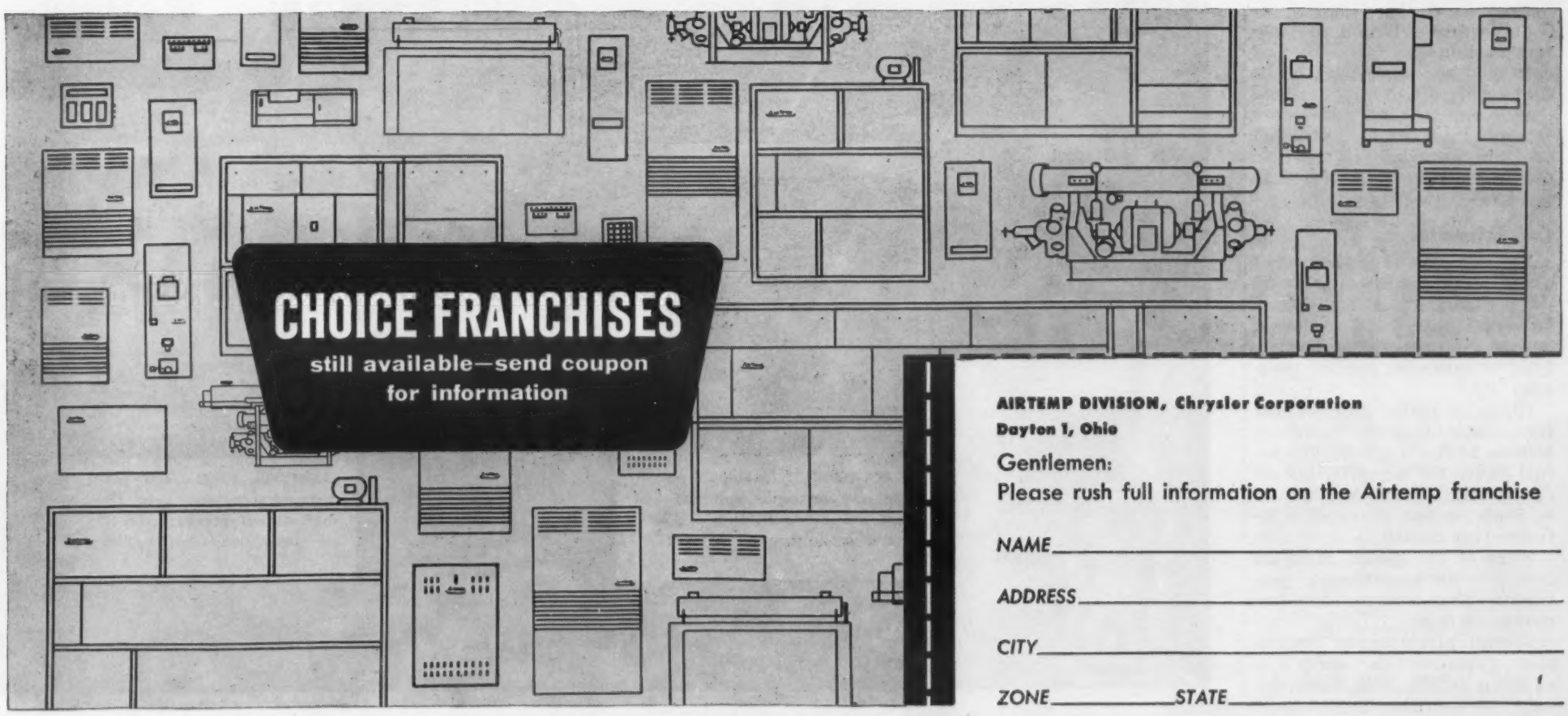
Airtemp now offers a wide range of big-tonnage *air-cooled* "packaged" air conditioning. Sizes now available are 2, 3, 5, 8, 11, 15, 20 and 30 HP.

New Water Chiller Systems

Airtemp's new centrifugal water chillers are now being produced in sizes up to 500 HP.

AIR CONDITIONING AND HEATING FOR A ROOM, A HOME, A BUSINESS, AN AUTOMOBILE

Airtemp DIVISION CHRYSLER CORP



AIRTEMP DIVISION, Chrysler Corporation
Dayton 1, Ohio

Gentlemen:
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Is Air Conditioning the Solution to Overcrowded Schools?

Symposium Looks at Benefits, Problems

LOS ANGELES—Air conditioning for schools poses some special problems, but it offers great benefits to pupils and teachers, and by lengthening the school year it affords a possible solution to overcrowding.

Moreover, complete air conditioning for schools is not as expensive as most people think, particularly in terms of the percentage of the total school budget.

This was brought out in the symposium on "Air Conditioning in Schools" held during the recent Western Air Conditioning and Refrigeration Exhibit and Conference here. Frank Neal, western director, School Div. of Minneapolis-Honeywell Co., served as moderator for the session.

What Does Cooling Cost?

What does air conditioning for schools cost? The discussions brought out that there are a number of ways of looking at it, but perhaps the most eye-opening, in terms of presenting probable costs to school boards, is to relate it in terms of its percentage to the total budget for a primary or secondary school.

One rough estimation of such cost, it was stated, was to figure that 10% of a budget for a particular school will be in the building itself, and 10% of the building cost for the heating and ventilating system. If a comfort cooling system is added, another 6 to 10% of the building cost must be added. However, it is pointed out that installation of a complete air conditioning system can reduce other first and maintenance costs.

Another estimate, somewhat more refined, and said to be based upon some actual experience, set up these figures:

Heating cost—7.7% of total building cost.

Cost of making provision for future installation of comfort cooling—.8 of 1% of the building cost.

Subsequent addition of comfort cooling—3.5%.

In another approach to the subject of cost, it was declared that complete air conditioning (meaning comfort cooling) could be provided for a school for an addition of .7 of 1% to the total school budget.

Cost Estimates

Estimates on what the cost of complete air conditioning would run per square foot ranged from 75 cents to over $2, depending on the nature of the system, type of controls, special problems, etc.

Other estimates put the cost for comfort cooling alone at $300 to $400 a ton, while the actual figure for a year-round air conditioning system was said to be $900 per ton of installed refrigeration capacity.

Some of the special problems in school air conditioning, particularly that done for the classrooms, include:

Special attention to ventilation problems in order to a) keep pupils from becoming logy; b) prevent the spread of germs; c) to handle odor problems.

Air distribution into the classrooms is generally preferred above head level.

In comfort cooling installations, a somewhat paradoxical problem is posed upon the arrivals of the pupils in the morning. It is thought generally preferable not to have too cool a condition early in the morning, because younger children particularly are sensitive to sudden temperature changes. On the other hand, the sudden inrush of pupils into the classroom brings about a big increase in the heat load, which the system must be prepared to handle.

Thus, it is general practice to provide, where possible, individual temperature control in each classroom.

Another factor to be taken into consideration is the special heat producing classrooms, such as physical science laboratories, and domestic science rooms.

In leading off the formal discussions at the symposium, E. B. Hilton, chief engineer, C. W. Walz Co., recounted a rather astounding amount of comfort cooling for schools that has been done in the Bakersfield and Taft (Calif.) areas.

The Walz Co. designed school air conditioning systems totaling 2,250 tons of refrigeration either presently installed or for which provisions have been made for the addition of refrig-

(Continued on next page)

the most
MYLAR*POLYESTER FILM INSULATION has 35 times more moisture resistance than ordinary paper insulation —means longer motor life.
*Reg. Trademark of Dupont Co.
PROTECTIVE COATING of polyester varnish on stator and shell assembly resists moisture and corrosion—contributes to quiet operation.
QUICK-CONNECT TERMINALS permit fast, easy connection of motor leads, facilitate standardization, and save you time and money.
OLD STYLE MOTOR
G-E FORM G MOTOR
LARGE OIL SUPPLY and carefully designed retention system mean shaft is constantly bathed in filtered oil—assure longer bearing life.

For more information about products advertised on this page use Information Center, page 20.

Air Conditioned Schools--

(Continued from preceding page)
eration cycles when desired.

While slightly more than 1,500 tons of this capacity has gone into one system alone—that for Bakersfield college—the remainder is spread over the following installations:

North high school music and administration building. Wasco high school music building. Shafter high school administration building (installed) and library, study hall, and homemaking building (future). Bakersfield high school administration building (installed), counciling building (future).

Taft high school music building. Taft college administration building, classroom building, library building, and cafeteria. Arvin auditorium and music building; Safter auditorium and music building. Bakersfield educational center. Portersville high school library and study hall (future).

Use Conventional Duct Systems

All of these installations utilize conventional duct systems. The air handling systems included individual zone fan coil units, package type multi-zone units, built-up centra fan, and double-duct systems. Refrigera-

(Concluded on next page)

Firm's Orderboard Shows Many Sales Made To Schools In '57

LOS ANGELES — Planners for the nation's educational institutions, regearing this fall for substantially more than the 41,533,000 students enrolled in 1956, have taken action in sizable numbers for student and teacher comfort, a report from air conditioning manufacturer Drayer-Hanson indicates.

With new construction and expansion of school facilities, public and private, standing at an all-time high, Fred E. Schmuck, D-H national sales manager, noted that his firm's "orderboard business shows an unusually high percentage of total sales attributable to school activity."

Variety of Types Of Cooling Units

Listed by the spokesman are several score of educational projects already set with full air conditioning systems, in the months just concluded. Noteworthy is the variety of types of systems and diversity of uses.

A major air conditioning project at Louisiana State university, Baton Rouge, will be finished in time for the fall semester, where a majority of campus buildings have been Drayer-Hanson year-round comfortized by 30 heavy air-handling units.

Individually-zoned equipment was installed at Mississippi State college, Jackson, Miss.; Baylor university, Waco, Texas; and Lake Jackson Elementary & Junior High school, Lake Jackson, Texas.

The Biology and Geology Depts. at Rice Institute, Houston, are now fully equipped with room-by-room units. Similar equipment is set at Ernie Pyle Junior high, Albuquerque; University of Nevada, Las Vegas; Roosevelt Junior High school, Salt Lake City; and Finley school, Finley, Wash.

Also, Girls' High school, Macon, Ga.; Lindberg School at Tulsa; and Thomas Jefferson High school, Los Angeles.

Military Gets Systems Too

Military trainees will keep cool this fall at the Special Weapons Training Facility, U. S. Naval Air Station, San Diego; Patrick Air Force Base, Cape Canaveral, Fla.; and the U. S. Fleet Sonar School, San Diego, continues Schmuck. Eight large air handling units are headed for Battalion Classroom Buildings, So. Fort Hood, Texas.

The statement concludes that "other facilities recently D-H air conditioned for every activity" include the new Western Air Line Training Center, International Airport, Inglewood, Calif.; Pasadena City college, Pasadena; and the Flagstaff Stadium, Flagstaff, Ariz.

FOR YOUR AIR CONDITIONING EQUIPMENT . . .

dependable G-E fan motor yet!

Now, your choice of *either* shaded-pole or permanent-split-capacitor in *one* frame design.

You need General Electric fan motors with *all* their advanced features to give your customers the *ultimate* in long motor life and dependable operation of your air conditioning units.

G-E fan motors are *built to last*! Every design innovation is carefully developed and exhaustively tested. Materials are specifically chosen for quality and durability.

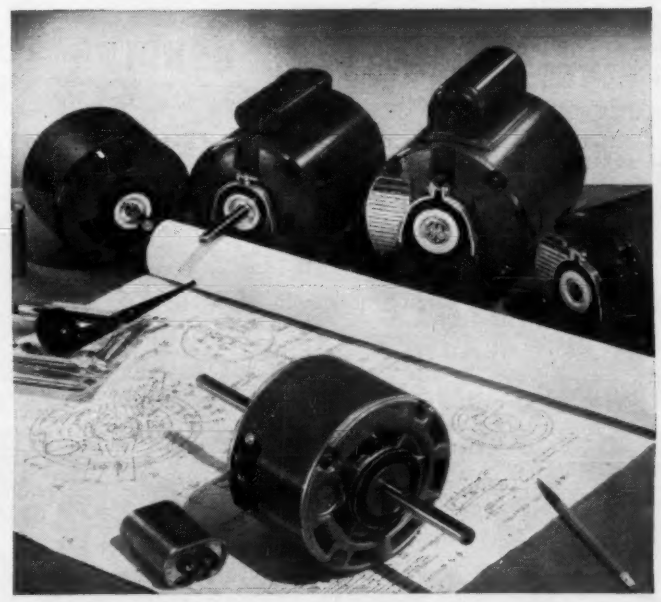
Unified insulation system gives optimum protection against moisture, heat and electrical stresses. Superior lubrication system has high oil retention, rapid recirculation; provides bearings with cool, filtered oil. These features give you *dependable, quiet* motor operation. In addition, both motors (shaded-pole and permanent-split-capacitor) offer these important advantages.

SMALL SIZE: Short length (3.5″ over-all) and lower temperature rise permit more compact unit design.

TOP PERFORMANCE: G-E fan motors have electrical characteristics that offer the optimum in low current, speed control, stability and application flexibility.

VERSATILITY: Ratings to ¼ hp in both shaded-pole and permanent-split-capacitor designs are available in *one* motor size at either 1050 or 1550 rpm!

All these features make G-E fan motors ideal for your air conditioning units. For more information, call your G-E Apparatus Sales Office or write Section 702-57, General Electric Co., Schenectady, New York.



A COMPLETE LINE of motors for nearly all types of fans and blowers is available *now* in General Electric's years-ahead "Form G" design. This outstanding line includes capacitor-start, split-phase, shaded-pole and permanent-split-capacitor type motors.

GENERAL ELECTRIC

FAST SAMPLE SERVICE is tailored to meet your specific requirements. See General Electric first for the fastest sample service.

APPLICATION ENGINEERING AID is available from G.E. to assure you of exactly the right motor for your product.

PROMPT LOCAL REPAIR SERVICE is provided by nationwide network of Small Motor Service Stations.

***Handy* Tube Bender**

Smoothly Bends any pipe or Tubing ⅜″-1⅛″ O.D.

• Just a twist of the wrist assures perfect, even bends — right angle, any angle, U and offset. Save enough on ONE job to pay for your HANDY BENDER.

See your supply house—or write for free folder today.

HOLSCLAW BROS., INC.

428 N. Willow Road • Evansville, Indiana

Air Conditioning Schools--

(Continued from preceding page)

tion systems used included direct expansion and chilled water systems.

The Bakersfield college job, as Hilton described it, had some interesting facets in that the original design for the job called for each building to have its own heating and cooling plant. This concept was discarded when it was decided that it would be necessary to have a central heating plant, so it was then determined to have a central refrigeration plant.

Uses 7-In. Pipe Sections

Considerable study was given to the various methods of carrying the piping to the various buildings. Method selected was the use of concrete pipe sections 7 ft. in diameter. The problem of mounting brackets was solved through the use of a steel ring cast into the center of each section, to which mounting brackets were welded.

Each room at the college, except for small adjacent offices with the same occupancy load and exposure, were individually zoned. Because of the great variation in usage of the rooms, Hilton said, his firm has found that zoning is more critical in schools than in other types of buildings.

Describes High-Velocity System Developments

Some of the new trends and developments in high-velocity air distribution systems in air conditioning applications were described by Milton Wilson, general sales manager, Anemostat Corp.

There is a trend to constant volume type dual duct systems in high-velocity applications, the speaker said. New units are equipped with sensing devices in the diffuser assembly which control the temperature and also keep static imbalance under control.

On such systems being currently installed air pressures can vary from 1 to 4 in. without causing any greater variation in either temperature or air handling capacity.

Improvements in design of high velocity systems are now making it possible to use light gauge metal in the ductwork, and with the use of round fittings, there is no distortion caused by pressure. Procedures have also been developed for joining parts of the high velocity ductwork with a simple lock seam.

Wilson declared that the type of air diffusion induced by the under-the-window mixing and distributing outlets in a high velocity system is ideal for schools in that the air flows up along the window surfaces then across the ceiling at proper velocities.

Direct Expansion Cooling System

A type of air conditioning system for school classrooms that could be installed by any competent air conditioning contractor was outlined by W. L. Donley, a consulting engineer.

A 6-classroom addition at Arvin, Calif., was air conditioned by a direct expansion cooling system, designed and built for use with air-cooled condensers.

With a forced warm air heating system being used, a direct expansion coil was placed in the plenum of the heating system, and the air-cooled condenser on the roof.

A floor panel system was used to distribute the air from the heating system, and high wall outlets were used for the cooled air. Return air was taken through a slot in the 4-in. toe space underneath the storage cabinets.

The change from heating to cooling and vice versa is accomplished by regulation of dampers. Introduction of outside air is controlled through manually adjusted dampers.

By use of a butterfly roof design, the installation of the air-cooled condensers on the roof was concealed from view. Even with such roof design, Donley warned against placing the condensers so that the fan is beating against the prevailing winds.

If schools believe that they cannot afford to install year-round air conditioning at the time new buildings are put up, they should be urged to have a heating system with the plenums, ductwork, and outlets so installed and sized that a relatively simple cooling system of this type can be installed later, Donley stated. Cooling might even come out of the maintenance budget, if such a procedure were followed.

'Airfloor' System Flywheel Effect

How the unique "airfloor" system, in which the air distribution system becomes an integral part of the building structure, fits into the school air conditioning picture, was outlined by J. B. Richardson, project engineer for J. S. Hamel, engineering firm.

The unusual principle in the air floor or "air panel" system, as Richardson termed it, is in the use of air movement through a hollow concrete floor.

The general design of the floor in such a system is a hollow concrete floor formed by laying a series of metal pans on top of a concrete sub-slab. The metal pans are then covered with another thin slab of concrete approximately 1½ in. thick.

The metal pans form a void into which air can be introduced by a number of methods, such as a concrete pipe with small sleeves that allow the air to escape into the floor at even intervals, or a concrete trench with bridging plates.

Air can be introduced into the conditioned spaces from the air panel by means of baseboard registers, window-sill registers, wall outlets, or toe-space registers.

Richardson said that in the course of the engineering firm's experience in engineering for some 80 schools in Southern California, that a definite heat storehouse or thermal fly-wheel was found in the floor.

Utilization of this thermal flywheel effect of the floor makes the development and control of proper temperatures relatively simple, Richardson declared.

The system is started up about 1½ hours prior to the opening hour of the school, using 100% return air. At the time when school opens a time-clock switches all dampers to correspond to a 25% outside air and 75% return air condition. The room is then at its predetermined temperature.

An outside thermostat is set so that when the outside air

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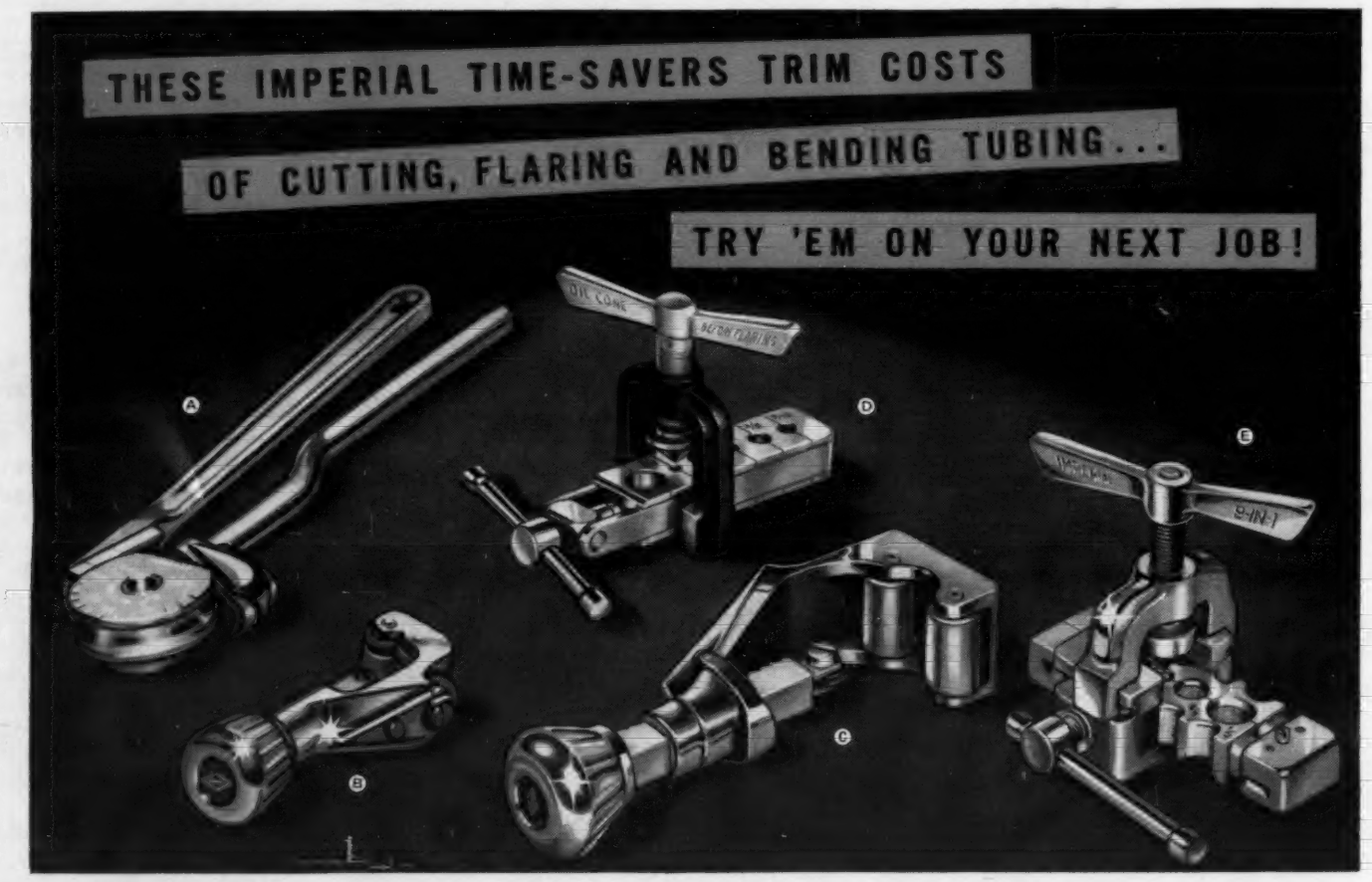


Ⓐ **Bends hard or soft tubing.** Open-side design. Accurate bends, any angle to 180°. Calibrated. No. 364-FH "Blue Dot" tube bender. Sizes: ⅛ to ⅞" O.D. tubing. (⅛ to ¾" nom.) Individual benders for each tubing size.

Ⓑ **Spare cutting wheel included at no extra cost with this tube cutter.** Exclusive! Fits behind retractable reamer — ready for emergencies. Free-wheeling, ball-bearing action. No. 274-F Hi-Duty tube cutter. For ⅛ to 1" O.D. tubing. (⅛ to ¾" nom.).

Ⓒ **Adjust-o-matic tube cutter for sizes ¾ to 2¼" O.D.** (⅝ to 2" nom.) Quick slide-to-size ratchet adjustment. Quick ratchet release. Ask for No. 206-F.

Ⓓ **Automatic burnishing action!** Rolls flares in the air. Hard chrome finished cone. No. 500-F (45° and 37°) flaring tool flares and burnishes 3/16, ¼, 5/16, ⅜, ½, ⅝" O.D. tubing. (⅛, ¼, ⅜ and ½" nom.).

Ⓔ **Flares 9 sizes of tubing.** Precision gauge assures proper size of flare. Hard chrome finished cone. No. 900-F (45°) for ⅛, 3/16, ¼, 5/16, ⅜, 7/16, ½, ⅝, ¾" O.D. tubing. (⅛, ¼, ⅜, ½, ⅝" nom.).

Imperial offers you the world's most complete line of tube-working tools with more work-saving features!

Equip now with Imperial tools to take the "work" out of tube working. Whatever the type of tubing — copper, aluminum, steel or stainless steel — you get more accuracy, speed and working ease. And customer-pleasing craftsmanship comes easy. Tool up now with Imperial and be first with the latest. Get complete facts on the industry's most complete tubing tool line.

Avoid lost time and grief by replacing labor-wasting tools NOW with years-ahead IMPERIAL tubing tools. See your Imperial wholesaler now, or write for Catalog 3011.

No. 300-F flaring tool for 45° flares. Single lever clamping. Flares 3/16, ¼, 5/16, ⅜, ½, ⅝" O.D. tubing. (⅛, ¼, ⅜, ½" nom.).

No. 140-F test plug — for closing end of tube temporarily. Pressures to 100 pounds.

No. 203-FS flaring tool for larger sizes: ⅝, ⅞, 1⅛" O.D. tubing. (½, ¾, 1" nominal).

No. 384-F sawing vise for cutting tubing 3/16 to 1½" O.D. (⅛ to 1¼" nominal).

No. 270-F Gear-type bender bends any type of tubing.

No. 260-F tube bender combination for 7 sizes: ¼ to ⅞" O.D. (⅛ to ¾" nominal).

IMPERIAL

THE IMPERIAL BRASS MFG. CO.
566 S. Racine St., Chicago 7, Ill.
In Canada: 334 Lauder Ave., Toronto, Ontario

Emblem of Quality

For more information about products advertised on this page use Information Center, page 20.

Cooling Schools--

(Concluded from preceding page)

reaches a temperature of approximately 60° F., all dampers are thrown to a 100% outside air setting, thereby turning the ensuing room temperature override into a definite advantage, Richardson relates. A room thermostat controls the amount of heat required in each individual room.

Richardson said that their findings had been that the floor temperatures, whether heating or cooling, vary between 70 and 72° F., regardless of the temperature of the air entering the floor. The air temperatures leaving the floor in both cases vary between 68 and 72° F.

He also said that a high velocity distribution system had been developed where velocities as high as 8,000 f.p.m. have been reached without noise, even though there was no use of sound attenuation chambers.

Cost of a high velocity air floor system, including boiler, pump, air handling unit with heating coil, complete with all controls, can be less than $1 per square ft. installed, Richardson declared.

Some of the special factors involved in school air conditioning systems were outlined by Dale Briggs, western manager, Herman Nelson Div., American Air Filter Co.

He said that studies of the present systems in schools showed that slightly over 60% of them had some sort of forced ventilation, with the balance having something better or something worse in terms of air conditioning.

The following are some of the special "characteristics" of schoolroom requirements:

1. Rapid heating and rapid cooling (most classrooms are occupied only 6 hours out of 24). Another factor along this line is the sudden inrush of students at the time the classroom opens, which has special effects on the heating, cooling, and ventilation loads).
2. Ventilation is particularly important, because of the odor problem, and also as a means of keeping the students from getting "logy." An air change every 6 to 9 minutes is generally considered desirable.
3. Prevention of overheating and overcooling is important, as the students' resistance is often low, and they are prone to contract contagious diseases readily. Also, an overheated room is not conducive to mental alertness.
4. The control system, in addition to accomplishing the objectives in point 3, must provide this balancing of factors on a room-by-room basis.

Recold Outlet Opens Branch In Charlotte

LOS ANGELES — The L. R. Gorrell Co., representative of Recold Corp. in Raleigh, N. C., has opened a branch office in Charlotte, N. C., announces H. T. (Hy) Jarvis, president of Recold.

The Charlotte office, headed by Emil Shearon (partner in the Gorrell company), was established to better serve the customers, said Gorrell, and will cover the Charlotte and South Carolina areas.

Pacific Metals Moves, Expands Supply Dept.

SAN FRANCISCO — Pacific Metals Co., Ltd., has moved to a new two-story office building and the adjoining high ceilinged, steel frame, metal clad warehouse with floor space of 192,840 sq. ft. recently purchased. New address is 1900 Third St.

B. E. Watters, vice president in charge of Refrigeration Div., said the new location has excellent rail service into the warehouse, and floor space for truck operations.

The Refrigeration Div. represents manufacturers of air conditioning and refrigeration equipment and components.

Expanded facilities are being built in the warehouse for Pacific Metal's growing Refrigeration and Air Conditioning Supplies department, Watters further said.

Ranco's 161,000-Sq. Ft. Plant In Scotland; Combines With Italian Plant To Supply European Controls Market

COLUMBUS, Ohio — Due to delays in transmission, detailed accounts of the opening of the new Ranco Inc. plant at Tannochside near Uddington, a suburb of Glasgow, Scotland, have only recently arrived in this country.

ADDRESSING a group attending the opening of a new Ranco Inc. plant in Uddington, Scotland is E. C. Raney, board chairman. He and Mrs. Raney were given the full "red-carpet" treatment.

The new plant, covering 161,000 sq. ft., is a modern one-story building with a two-story office section, employing between 1,300 and 1,400 persons. Despite the fact that the new plant entailed an additional six miles travel beyond the former plant, 98% of all employes elected to continue with the company.

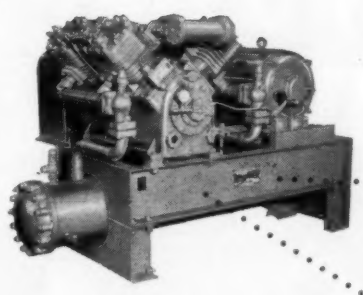
Present output of the Scottish Ranco plant is approximately 1,700,000 units annually. Of this amount, 94% is for export, the balance being absorbed by the British Isles, it was further pointed out.

With the recent opening of the Italian Ranco plant in Italy (reported in AIR CONDITIONING & REFRIGERATION NEWS), Ranco is in a position to supply the needs of free European countries and their outlying possessions.

The opening of the new plant in Scotland was attended by E. C. Raney, chairman of the board of Ranco Inc., and Mrs. Raney, and was given the full "red-carpet" treatment by the local dignitaries and press.

Good For Business

...YOURS!



BRUNNER
SINCE 1906

BRUNNER . . . *newest member of the* DUNHAM-BUSH *family . . . offers you* Dual Dependability

- dependable Brunner Condensing Units
- expanded engineering assistance in air conditioning, refrigeration and heating

The new Brunner and Dunham-Bush combination puts a highly qualified sales engineer "next door" to every town . . . yours included . . . with valuable technical assistance and advice.

This Brunner and Dunham-Bush sales engineer's

ability
availability
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Is Good For Business . . . Yours!

BRUNNER DIVISION
DUNHAM-BUSH, INC.
UTICA, NEW YORK

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1)

son's brainstorm were set up in dealers' showrooms — with streamers attached to show the air flow pattern. Today they are surefire shopper-stoppers. "The moving display fascinates the customer, and the utility of the gentle oscillating action sells them," Mr. Gibson comments with pardonable pride.

Mysteries Behind Price Increases

Until recently the Eisenhower Administration has done a reasonably good job of sitting on the lid of those apparently inexorable forces which foster continually higher and higher prices. Presently, though, it is obvious that world-wide monetary pressures are tilting that lid so irresistibly that not even Eisenhower and his astute cabinet can seal them off.

In the last 12 months living costs for American citizens have inched up 3.6%, and the end is not in sight. Can cantering inflationary forces be check-reined? Possibly—in our country, at least. Much more drastic credit control measures might do it. However, loads of people would howl to high heaven if such controls were applied. As a matter of fact, quite a few businessmen are hurt already by the mildly dampening measures taken so far.

If the Federal Reserve Board would put on the brakes jarringly, liquidation of inventories, lower sales volume, and unemployment might ensue. Personal buying power undoubtedly would decrease, and commodity prices might even decline, also. Voters would like the latter, but would scream if their take-home-pay nosedived.

At that point the Federal Employment Act of 1946, which imposes on our Federal government the obligation to sustain "full employment," would effectuate. Large-scale unemployment quickly would lead to a reversal of the Federal Reserve Board's so-called "tight money" policies. Under the law the FRB would be forced to do what it could to halt an incipient recession or depression.

Frankly, that is a great deal more than it can do to stop soaring prices. It's a helluva lot easier to print more money than it is to damper the natural forces of inflation.

The Federal Reserve Board is potent, but it lacks sufficient power really to control economic upswings. For example: If the "tight money" policy pursued by the Federal Reserve during the last 18 months had been accompanied by declining expenditures of Federal, state, and local governments, possibly the board's actions could have helped tone down the price rises we are experiencing.

However, during that time total government spending soared and roared ahead—more than nullifying the board's activities in behalf of stabilized prices.

Federal Reserve Limitations

To halt runaway UPS or DOWNS in our economy, our Federal Reserve System lawfully can apply only three devices to open or close the valve of money and credit flow.

First method: Altering the reserves which commercial banks are required to keep on deposit. By raising or lowering these requirements, the board can curtail or increase the amount of money which banks can lend. (Loans tend to be inflationary.)

Second method: By buying government securities, its Open Market Committee can pour the equivalent of new money into the banking system. On the other hand, by *selling* bonds it can shut the door, Richard, on lending zoomth.

Third device: By inching upward the interest rate which commercial banks must pay when they borrow from the FRB, the latter will have to charge local borrowers more. Perforce, borrowers are likely to postpone building their dream-castles until the cost of hiring money isn't so disturbing to their plans.

Credit or cash can be ladled out by government at will, you see, but goods and services cannot. There is a limit to what our nation can produce and sell at any given time. Hence, government credit cornucopias, unmatched by goods-for-sale, tend to raise prices of all products and services "on the market" (those which actually can be bought by citizens).

Taxes also tend to raise prices. The 52% corporate income tax is shifted to consumers, of course. Social Security taxes add to business costs, obviously, and so do local taxes—both of which are continuing to mount. Transportation charges rise annually; likewise, those for raw materials. And union wages are leaping beyond workmen's productivity. Similarly, farm subsidy programs tend to keep consumer food prices higher than "natural."

The Federal Reserve Board has no control over: (1) taxes, (2) wages, (3) government subsidies. It can pour money out in a Deflation, but its powers are inadequate to halt Inflation.

Summation and Trial Balance

Inflationary pressures therefore result principally from ever-increasing costs of doing business, leapfrogging taxes, and bulging government budgets.

What can we, Mr. and Mrs. John Q. Public, do about this dilemma?

Economists argue about the solution. One school asserts that erosion of your capital and savings is unavoidable when government pledges a policy of full employment. Kind-hearted proponents of this policy declare that it underwrites personal ambitions for higher standards of living—despite what it does to savers, inheritors, widows and orphans, pensioners, and small business enterprises.

Contrary-minded economists argue that inflation cannot continue indefinitely without national collapse. It never has, and never will—they can prove historically. As has happened in all European and Latin American countries which have let prices-and-wages get out of hand, runaway inflation inevitably results in social and political calamity. Loss of freedom is the highest of the prices paid by citizens for their folly in this regard.

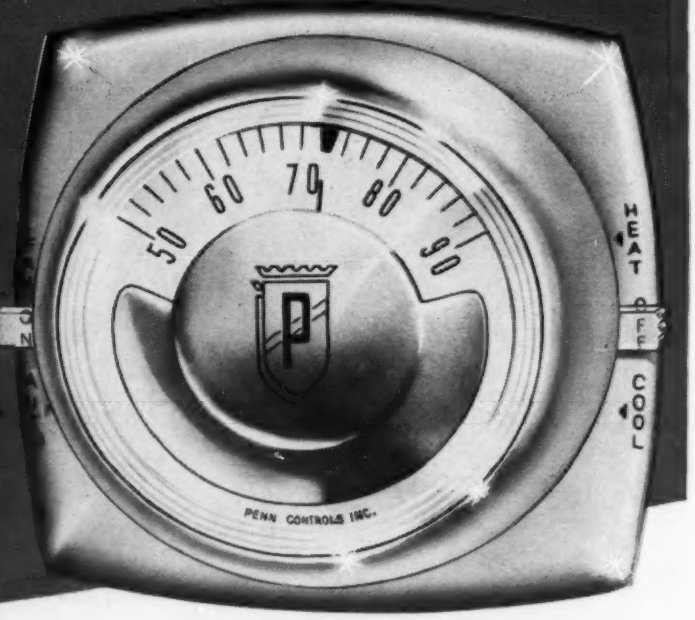
FRB Tries, But Is Hamstrung

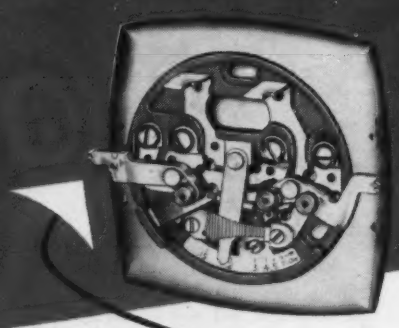
In sum: Our enormous "defense" budget subsidizes manufacturers of military hardware, but doesn't raise our standard of living. Reason is that men working for munitions makers

(Concluded on next page)

PENN "RIMSET" THERMOSTAT REDUCES YOUR INVENTORY

Now... the same room thermostat can be used for 12 different heating and cooling jobs... just change the sub-base!





Actual size illustration

APPLICATION	FAN SELECTOR SWITCH	SYSTEM SELECTOR SWITCH
HEATING ONLY	—	—
	—	AUTO-OFF
COOLING ONLY	—	—
	—	AUTO-OFF
	AUTO-ON	AUTO-OFF
	AUTO-ON	—
COOLING—with system interlock for separate heating thermostat	—	HEAT-OFF-COOL
	AUTO-ON	HEAT-OFF-COOL
COMBINATION Heating-Cooling	—	HEAT-COOL
	AUTO-ON	HEAT-COOL
	—	HEAT-OFF-COOL
	AUTO-ON	HEAT-OFF-COOL

HERE'S HOW IT'S DONE

You don't have to stock a different thermostat for each heating and/or cooling job! You just need one — the new all-purpose Penn "RIMSET" thermostat that quickly "plugs" into any sub-base required for the job. Inventory is reduced because you stock variables of the sub-base only!

Installation is simpler, too! Sub-base does not have to be installed in a perfectly level position for accurate operation. The adjustable heat anticipator and all wiring are on the sub-base where large terminals are easily accessible.

And, this beautiful room thermostat gives you new sales power! It has the largest, most easily read dial you've ever seen . . . and the scale remains stationary as the rim is dialed for the temperature setting!

Once you see this new, excitingly different thermostat, you'll want to specify and install it in all your heating and cooling jobs!

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 39th ST., NEW YORK, N. Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

For more information about products advertised on this page use Information Center, page 20.

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from preceding page)

are paid for making weapons which aren't for sale to the general public. Hence, these paychecks compete in the market for goods which ARE for sale.

Competition for civilian goods and services gets rougher every year, therefore. Furthermore, annual union wage uppings haven't been matched by increased production in recent years. Since 1954 labor-union wage increases have exceeded 5% annually in key industries, while labor productivity has risen less than 2%.

Those factors, plus the popular full employment policy, nullify efforts of the Federal Reserve Board to sit on the lid of Big Union, Big Corporation, Big Government spendings.

WHAT . . WHEN . . WHERE — *A Guide to Coming Events of Interest*

U. S. Environmental Control Conference
Sept. 12-13, Los Angeles.

International Association of Electrical Leagues Convention
Oct. 2-4, Sinton hotel, Cincinnati.

Locker & Freezer Provisioners International Convention
Sept. 15-18, Hotel Leamington, Minneapolis.

American Gas Association Convention
Oct. 7-9, Kiel auditorium, St. Louis.

Milk Industry Foundation Convention
Oct. 21-23, San Francisco.

National Electrical Manufacturers Association Meeting
Nov. 11-15, Traymore hotel, Atlantic City.

American Society of Refrigerating Engineers Meeting
Nov. 14-16, Shoreland hotel, Chicago.

Refrigeration & Air Conditioning Contractors Association Convention
Nov. 16-18, Drake hotel, Chicago.

Air Conditioning & Refrigeration Wholesalers Meeting
Nov. 17-18, Morrison hotel, Chicago.

Refrigeration Service Engineers Society Convention
Nov. 16-19, Hotel Morrison, Chicago.

National Commercial Refrigerator Sales Association Convention
Nov. 18-19, LaSalle hotel, Chicago.

National Association of Practical Refrigerating Engineers Convention
Nov. 18-21, Del Prado and Sherry hotels, Chicago.

10th Exposition of the Air-Conditioning & Refrigeration Industry
Nov. 18-21, International Amphitheatre, Chicago.

National Warm Air Heating & Air Conditioning Association Convention
Nov. 18-22, Hotel Morrison, Chicago.

Semantemathematics

Technical problems involved in combatting inflation are numerous, of course, and often weird. "Money" in the United States is the total of demand deposits in banks plus currency outside the banks. This total has increased slowly in recent years —less even than our nation's expansion rates.

From 1952 to 1956 money supply increased less than 8%, while industrial production rose more than 15%. From 1947 to 1952, our supply of money went up 11% while output expanded 24%. From 1941 to 1947 money supply increased 130% while gross national product (which is total output valued at current prices) grew only 84%.

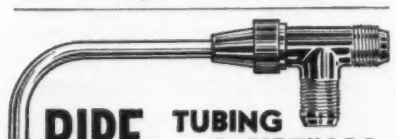
That pent-up situation in itself opened the door to expansion of our money supply, some say. It puzzles textbook-trained economists, however.

Eagerness of suburbanites and business enterprises to borrow fosters price rises, also. Without this willingness of young families and corporations to mortgage their future, possibly neither labor bosses nor business executives could have made their wage and price advances stick without incurring sharp cuts in jobs and profits.

Inflation might be halted, it is suspected, if we could lower the temperature of money in people's pockets today.

Our Congressmen also might help by refusing further to vote for union monopolies, caviar for African cannibals, and by allowing our free enterprise system to return to the centuries-tested law of supply and demand.

Trouble is, none of these remedies would be popular. Shall we resign ourselves, then, to higher and higher prices and continued erosion of our capital? Seems like.



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Acceptance Proves It! From coast-to-coast refrigeration service and maintenance men have discovered two great MORTELL products which give them price, convenience and quality advantages *unmatched* by any other compound on the market today. Now, sealing and caulking jobs are finished faster, better and at much less cost than ever before!

"Tool Kit" Size! Both *Mortite Caulking Cord* and *Mortite Caulking Gum* come in handy cylindrical containers—easily fit into any crowded tool box, large or small. These compact containers have been designed by working refrigeration servicemen to eliminate product waste resulting from flimsy, bulky packages.

THESE FACTS TELL THE DIFFERENCE!

MORTITE CAULKING CORD—3/16" rope-like strands always retain the consistency of modeling clay. Non-staining, Mortite White in color—may be painted *immediately* after application. Three compact 8-strand 16-ft. rolls can be unwound one or more strands at a time without unwinding entire roll.

MORTITE CAULKING GUM—Provides the perfect answer for the serviceman who needs a bulk caulking compound to hand mould into beads, wads, gaskets, etc. One pound slug (2½" x 6") never cracks or hardens—adheres to any clean, dry surface through normal temperature ranges.

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Mortite Caulking Cord or Mortite Caulking Gum will do the job better than your present caulking compound at a fraction of your present cost. Write today for complete information about these two products and the complete line of Mortell refrigeration products.

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_____Serviceman

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City_____State_____

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Makers of Famous Hobby Toys and Mortite

Find Refrigerated Bulk Milk Dispensers Satisfy Wis. Schools

Trouble-Free Units Raise Consumption, Lower Cost, Streamline Volume Service

MODERN Nicolet high school offers milk between classes at this milk bar in its main hall. Perhaps white milk consumption could be upped further by removing dispenser (l.) away from competition of malted milk dispenser (c.) and chocolate milk vendor (r.).

NEW YORK CITY—Refrigerated bulk milk dispensers were found to have given complete satisfaction in the 16 Wisconsin public school systems that have used them for periods ranging from 6 months to 5 years, according to a recently-completed survey.

Not only have the dispensers proved virtually trouble-free in all circumstances but they have increased milk consumption, lowered the cost of milk, and helped to streamline the volume food service offered by institutions feeding up to 1,400 children every day, it was pointed out.

Set Pattern of Cooperation

At the same time milk plant operators and others interested in gaining acceptance for refrigeration equipment have established a pattern of cooperation with schools that could be a model for the industry, the survey learned. Customer relations are reported to have been unusually well handled.

These findings are said to have applications in many markets in addition to that of school feeding. Improvements in design in recent years have made bulk milk dispensers acceptable to all state health departments, and the U. S. Public Health Service lists 13 manufacturers whose models meet the sanitation requirements of the Public Health Service Milk Ordinance and Code.

The review of dispenser performance in Wisconsin was conducted by the Field Research Div. of the Paper Cup & Container Institute with the cooperation of Gordon W. Gunderson, the officer in charge of the Wisconsin School Lunch Program. An interviewer from the institute visited the heads of 16 school systems and obtained answers from each to a detailed questionnaire on their experience with dispensers, it was explained.

Milk Consumption Rose 180% In Period

Milk consumption of the schools was found to have risen 180% in the period in which the various institutions were adding dispensers. Many factors played a part in this increase including a 20% rise in student population, the development of a Federal school milk program which strongly subsidized milk for children, and in a few cases entry into a school lunch program which included serving of milk.

However, every school increased its per capita consumption when it adopted dispensers, the survey showed. And in three schools—Lodi, East School in Baraboo, and Oak Grove Elementary—other factors can be ruled out so that gains attributable only to the dispensers can be measured. Gains in these schools ran from 45% to nearly 100%.

How Dispensers Help Increase Consumption

Dispensers contribute to the increase in milk consumption in three ways, it was noted. They make a volume feeding operation more efficient by eliminating the handling of small containers before and after serving. They also furnish reliable stations at which cold milk can be provided for an indefinite length of time. This means that milk can be made available in more places than formerly for longer periods, researchers said. More importantly, the dispensers keep the milk colder which makes it more palatable.

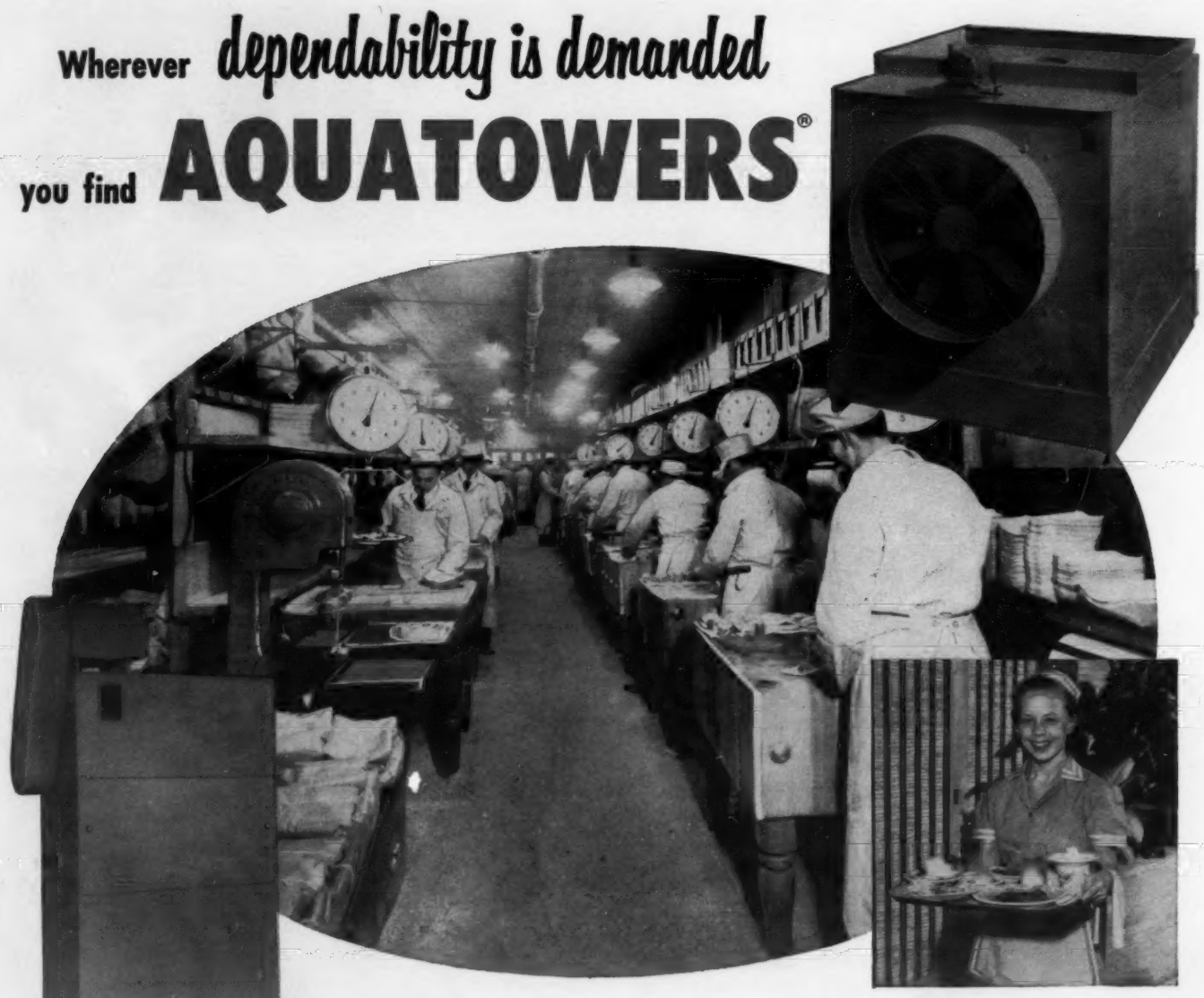
Schools have had difficulty in finding sufficient refrigerator space for their milk supplies, it was stated. Introduction of the school milk program heightened this problem still further in many schools by bringing more milk into use without providing a corresponding increase in refrigerating facilities. As a result, milk sometimes had to be stored without refrigeration for several hours—often in direct violation of health ordinances and codes.

In many of the schools studied, the dispensers helped to eliminate this problem entirely, the survey found. They provided sufficient additional refrigeration facilities to allow proper care of all milk used during the day.

Finally, the dispensers are said to help reduce the cost of milk. Purchasing milk in bulk, rather than in bottles or cartons,

(Concluded on next page)

Wherever *dependability is demanded*
you find **AQUATOWERS®**



and **AQUACOOLERS®**

Reliable refrigeration is essential to profitable food processing; dependable air conditioning is vital to profitable food service. That is why, wherever food is processed or purveyed, you find the water cooling job entrusted to Marley Aquatowers and AquaCoolers in the *majority* of cases.

Marley performance is more dependable (proved in thousands of installations), whether the required gallonage be large or small, because of these exclusive Aquatower or AquaCooler features:

- **diffusion decks for better initial water break-up.**
- **up to 25% more filling for additional water break-up.**
- **engineered aero-dynamic capacity for maximum air-water contact.**
- **Marley mechanical equipment designed specifically to deliver uninterrupted service; to operate with minimum non-professional maintenance.**

Contractors, engineers and owners are aware that the best protection of the big investment required by air conditioning and refrigeration is a small investment in a Marley Aquatower or AquaCooler. Only in these Marley towers do you receive positive assurances of maximum economy, long-lived operation and trouble-free performance.

MARLEY

The Marley Company Kansas City, Missouri

Milk Dispensers--

(Concluded from preceding page)

reduces packaging costs for the dairies, and it was found—where figures were available—that the schools were making an average saving of 7/8 cent per half-pint serving through bulk purchase.

In six of the schools studied the milk operators loaned and installed the equipment so that there was no cost to the institutions. In another situation, a dairy rents the dispenser to the school at a rate of 3 cents per gallon of milk sold through the dispenser. This means that the dispenser cost is less than a fifth of a cent per 8-oz. serving, it was added.

Charging Off Cost Under Federal Program

The cost of dispensers and the paper cups used with them can be charged into the cost of the milk under the provisions of the Federal school milk program. The schools are allowed to charge up to 1 cent per serving for the various costs of handling in addition to the cost of the milk itself. These schools have therefore purchased their dispensers outright in most instances and amortized the costs ($207-$600) over various periods of time ranging up to two years, with one year usually the period chosen, researchers commented.

The school with the highest priced installation reported arranging financing with its dairy of $60 down and 20 cents per gallon of milk until indebtedness and interest are paid off, it was added.

All Machines Were Put In by Installers

In every instance the suppliers put the machines in place. In a few cases milk plant operators furnish without charge the paper cups which 14 of the 16 schools use. Satisfaction that the school executives uniformly revealed with their milk plants was considered "impressive." Milk truck drivers were usually reported as loading the dispensers daily. The institute's interviewers found that there was not a single complaint about the operation of any of the dispensers. Every school head interviewed expressed confidence that his dairy would quickly remedy any difficulty with the equipment that might occur in the future.

All systems in this study have one or more schools in both the Special Lunch and Special School Milk Programs. All schools except one have grades 1 through 12, or kindergarten through grade 12. Several of the systems include area or rural schools, the researchers continued.

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CONDENSERS 1/4 TON to 15 TONS
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Firm To Use All Operating Divisions

To Install Store, Market Fixtures, Food Service Units, Commercial Refrigeration In 'Under-One-Roof' Center

LOS ANGELES — Construction of a $3,500,000 shopping center in Phoenix, "the largest under one roof in Arizona," is scheduled to get under way Oct. 1, with Weber Showcase & Fixture Co., Inc. of Los Angeles a prominent factor in the project.

Copper State Investment Co. of Phoenix has signed a contract in excess of $600,000 with the Los Angeles firm, which, for the first time, permits Weber to utilize all its operating divisions —including store fixtures, commercial refrigeration, market fixtures, and food service equipment—on a single job.

The 23½-acre development will include a supermarket and general store as well as drug, bakery, confectionary, hardware, apparel, and shoe units, etc., all to be housed within an 88,500-sq. ft. structure. In addition, plans call for a separate 10,000-sq. ft. restaurant and cocktail lounge.

Weber fixtures, both for stores and market, will be used exclusively as will refrigerated cases for dairy products, beverages, and frozen foods, and food service equipment for bar and restaurant, it was stated. All glass used in showcases will be beveled and edged by Weber's own glass machinery.

New Concept

The sizeable contract, explains Alexander Black, Weber executive vice president, results from a new shopping center concept—that instead of dealing with many stores which heretofore leased individually from the developer, Weber deals with one leasee, yet to be named, who, in turn, will sub-lease the shops and restaurants to others. One big job rather than many smaller jobs, of course, means considerable savings for all concerned, it was pointed out.

Weber plans to service the project from both its Los Angeles and Grand Rapids plants.

Conveyor System

A feature of the supermarket will be a system of conveyors from check stands to a refrigerated customer pickup station in the parking area, thus freeing customers to shop elsewhere in the center before returning to their cars.

Plans also call for outside, automat-type, compartmentalized cases, to be especially designed and constructed by Weber, which will permit shoppers to purchase standard packaged goods 24 hours a day. Particular attention will be paid to the parking area where ratio to center footage will be 12-1 as against the usual 4-1.

Copper State Investment estimates the shopping center, which will serve a seven-square-mile residential area encompassing 25% of Phoenix's population, will do a $10,000,000 business in its first year.

Actually, this will be the first of five centers planned by Copper State in Arizona over a three-year period. It has a second Phoenix site already selected. A third is being planned in that city as are complete centers in Tucson and Yuma, it was explained.

Jenni Genetron says,

"HERE'S THE RIGHT REFRIGERANT FOR EVERY NEED!"

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Selected Physical Data (Performance based on 5°F evaporator temperature and 86°F condenser temperature)	Trichloromonofluoromethane genetron 11 ORANGE LABEL	Dichlorodifluoromethane genetron 12 WHITE LABEL	Monochlorodifluoromethane genetron 22 GREEN LABEL	Trichlorotrifluoroethane genetron 113 PURPLE LABEL	Dichlorotetrafluoroethane genetron 114A DARK BLUE LABEL
Chemical Formula	CCl_3F	CCl_2F_2	$CHClF_2$	$C_2Cl_3F_3$	$C_2Cl_2F_4$
Molecular Weight	137.4	120.9	86.5	187.4	170.9
Boiling Pt. (°F) at 1 Atm. Pressure	74.7	—21.6	—41.4	117.6	37.6
Evaporator Pressure at 5°F (p.s.i.g.)	24.0*	11.8	28.3	27.9*	15.6*
Condensing Pressure at 86°F (p.s.i.g.)	3.6	93.3	159.8	13.9*	22.7
Freezing Point (°F) at 1 Atm. Pressure	—168	—252	—256	—31	—76
Critical Temperature (°F)	388	234	205	417	294
Critical Pressure (p.s.i. absolute)	635	597	716	495	478
Compressor Discharge Temperature (°F)	112	101	131	86	88
Compression Ratio (86°F/5°F)	6.24	4.08	4.06	8.02	5.33
Specific Volume of Saturated Vapor at 5°F (cu. ft./lb.)	12.27	1.46	1.25	27.04	4.04
Latent Heat of Vaporization at 5°F (B.t.u./lb.)	84.0	68.2	93.6	70.6	60.2
Net Refrig. Effect of Liquid—86°F/5°F (B.t.u./lb.)	67.5	50.0	69.3	53.7	43.0
Specific Heat of Liquid at 86°F (B.t.u./lb.°F)	0.21	0.24	0.34	0.22	0.23
Specific Heat of Vapor at Constant Pressure of 1 Atm. & 86°F (B.t.u./lb.°F)	0.13	0.15	0.15	0.15	0.16
Specific Heat Ratio at 86°F & 1 Atm. (k=Cp/Cv)	1.14	1.14	1.18	1.09	1.01
Coefficient of Performance	5.09	4.70	4.66	4.92	4.60
Horsepower/Ton Refrigeration	0.927	1.002	1.011	0.960	1.025
Refrigerant Circulated/Ton Refrig. (lbs./min.)	2.96	4.00	2.89	3.73	4.65
Liquid Circulated/Ton Refrig. (cu. in./min.)	56.0	85.6	68.0	66.5	88.7
Compressor Displacement/Ton Refrig. (c.f.m.)	36.32	5.83	3.60	100.76	18.78
Toxicity (Underwriters' Laboratories Group No.)	5A	6	5A	4-5	6
Flammability & Explosivity	None	None	None	None	None

*Inches of mercury vacuum.

COMPARE! Careful control at every step in the manufacture of "Genetron" Super-Dry Refrigerants results in products of highest purity, which are extremely low in moisture content and other undesirable impurities. Quality of current production consistently *surpasses* the rigid manufacturing specifications for these products. Write for important informative folder "Genetron Super-Dry Refrigerants."

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Allied Chemical

Weekly Air Shipments Deliver Auto Air Conditioners for Texas Mfr., Eliminate Warehousing, Control Inventory

TYLER, Texas—An auto air conditioner airlift earlier went into effect with the shipment of a planeload of automobile air conditioners from Tyler's Pounds Field here to Miami, Fla.

Climatic Air, Div. of Tyler Service Parts Co., manufacturer of automobile air conditioners, initiated the concept of weekly air shipments with Riddle Airlines to obtain faster delivery schedules and to eliminate warehousing, J. E. Wiley, Climatic Air sales manager, recently announced.

INSPECTING part of the full plane load of auto air conditioners which make up the first shipment of twice-weekly flights Climatic Air is using to supply its south Florida dealers are Jack J. Durett, Sr., Climatic president, R. W. Miller, Riddle Airlines maintenance supervisor, and J. E. Wiley, Climatic Air sales manager.

According to Wiley, the use of air cargoliners for distribution will make it possible to deliver the auto air conditioners direct from the airport to its south Florida dealers, thereby eliminating warehousing. Faster delivery schedules will also help the company control its inventory during the short selling season.

The airlift, believed to be the first of its type for auto air conditioner distribution, is part of a move by the company to expand its operations all over the nation.

Wiley noted that the selection of air freight to distribute his company's products was based on a recent Harvard university study which showed that the medium can be used to cut inventory costs and effect savings in interest, taxes, warehousing, and labor for the firm.

Climatic Air's 1957 auto air conditioner units feature push-button control, dual blower fans, and a magnetic clutch which operates both automatically or manually to disconnect the compressor from motor operation when the unit is not refrigerating.

The firm also manufactures a combination heater and refrigerator unit, it was further indicated.

Compressors--

(Concluded from Page 1)

registered by 2-hp. compressor bodies, whose shipments jumped from 38,950 units in the first five months of 1956 to 142,126 in the same period this year. Shipments of 1-hp. compressors in the five-month period this year amounted to 652,726 units, compared with 396,068 in the 1956 period. Smaller gains were shown in shipments or 7½, 10, and 25-hp. compressors.

Because of the decreases in shipments of less-than-1-hp. compressors, and in some of the larger sizes, except as noted above, the over-all gain in compressor shipments this year over last was held to less than 1% during the five-month period—2,366,273 compared with 2,343,-901.

The figures released by ARI were compiled from reports by manufacturers whose output is estimated to represent in excess of 95% of the industry. The totals given do not include compressor bodies designed for use with ammonia refrigerant. The figures, along with names of reporting companies, follow:

MANUFACTURERS' SHIPMENTS OF COMPRESSOR BODIES

Produced by Reporting Companies (Except for household refrigerators)

Horsepower*	Shipments Including Exports: May, 1957	Shipments Including Exports: Jan.-May, 1957
½ & under	44,469	216,456
¼	61,926	352,941
⅓	26,868	106,178
½	9,667	46,380
¾	77,038	292,198
1	104,313	652,726
1½	21,672	163,813
2	23,442	142,126
3	12,979	55,819
5	8,899	41,200
7½	5,484	25,847
10	1,612	6,207
15	394	1,673
20	213	1,084
25	237	936
30 & over	746	3,086
Total	**399,959**	**2,108,670**
For Ammonia Refrigerant—Total	123	638
For Automotive Air Conditioning—Total	47,291	257,603
Grand Total	**447,373**	**2,366,911**

*For all refrigerants **except** ammonia (excluding units for automotive air conditioning).

Reporting companies: Airtemp Div., Chrysler Corp.: Bendix-Westinghouse Automotive Airbrake Co.; Brunner Div., The, Dunham-Bush, Inc.; Carrier Corp.; Copeland Refrigeration Corp.; Curtis Mfg. Co., Refrigeration Div.; Frick Co., Inc.; Frigidaire Div., General Motors Corp.; General Electric Co.; Kelvinator Div., American Motors Corp.; Lehigh, Inc.; Tecumseh Products Co.; Trane Co., The; Vilter Mfg. Co.; Westinghouse Electric Corp.; Worthington Corp.; York Div., Borg-Warner Corp.

This summary includes all compressor bodies shipped by the reporting companies **regardless** of whether they were shipped separately or incorporated into a condensing unit or unitary end-use product (such as a room air conditioner, display case, freezer, or commercial refrigerator). Shipments for export are included. Shipments for household refrigerators are **not** included.

In order to avoid duplication of reporting, shipment figures were requested only from companies that assembled the machined compressor casting with the components necessary to make a complete compressor or motor-compressor assembly.

"Sure glad you came along ma'am,
but first my partner wants to know if you have a good, dependable air conditioner
in your car, the kind that's made with H & H parts."

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For more information about products advertised on this page use Information Center, page 20.

Some Manufacturers Report Increased Earnings and Profits for First Half

DETROIT — A 30% jump in earnings for the six months ended June 30 was reported by **Controls Co. of America.**

Earnings after taxes were $578,711 against $443,135 in the corresponding period a year ago, Louis Putze, president, said.

Net sales climbed to $14,446,658, or 5% over sales of $13,767,979 last year, it was added.

Here's how other companies fared in the first half of the year, according to recently released financial reports.

Westinghouse Electric Corp.'s net income for the first six months of 1957 amounted to $30,615,000, equal to $1.77 a common share, Gwilym A. Price, chairman and president, announced.

Sales billed for the period totaled $982,939,000, a record for any first half-year, Price added. Previous record sales billed in any first six months was $811,709,000 made in 1954. A high of sales billed in any quarter was set in the final three months of last year with $509,561,000.

Net income for the second quarter of 1957 was $16,417,000. Sales billed for the April-June period were $507,253,000, peak for any second quarter.

Admiral Corp. reported a loss of $316,513 after taxes for the second quarter of 1957. This compares with a net profit of $437,719 for the same period last year, according to John B. Huarisa, executive vice president. Second quarter sales were $36,451,382 compared with $37,170,366 a year ago.

Consolidated net sales for the first half reached $78,805,521, compared with $85,834,325 last year, Huarisa noted. Profits after taxes were $111,231 compared with $1,748,055 a year ago.

Huarisa pointed out that substantial profits in June nearly offset the operating losses sustained in the preceding two months due to costly preproduction expenditures for 1958 lines.

Glen Alden Corp. announced net income in both the second quarter and first half rose high above 1956 levels with first half net reaching $1,527,000 as against $777,000 in 1956.

Second quarter income this year totaled $822,000, Francis O. Case, president, said. This compared favorably with the $758,115 in the second 1956 period.

First half sales were $36,872,000, compared with $35,481,000 a year ago. About $17,000,000 of the 1957 sales came in the second quarter, Case revealed.

Case also commented that commitments for Mathes heat pumps for the rest of 1957 should "more than offset" a reduction in small window air conditioner sales.

Vendo Co. announced consolidated net sales of the firm and its wholly-owned subsidiary, **Vendorlator Mfg. Co.,** for six months ended June 30 were $22,248,724 which resulted in net profit of $900,708.

No comparisons with a year earlier were reported because the merger with Vendorlator was not effective until Sept. 18, John T. Pierson, president, said.

In comparing sales for the two periods, dollar volume of vending-equipment lines was about the same, Pierson explained. Air conditioning equipment sales of Vendorlator totaled about $200,000 last year. This has been discontinued.

Although there was some decrease in sales, earnings were almost equal to those of a year ago, Pierson stated.

Welbilt Corp. indicated sales of $11,632,775 for the six months ended June 30. Net profit for the period was $462,098, after giving effect to a $183,447 nonrecurring expense of closing and moving the Detroit plant. Before this expense, there had been a profit of $645,545, it was disclosed.

In the corresponding 1956 period, net sales were $12,430,481. Revised net earnings in this period totaled $787,272.

American Motors Corp. reported net operating losses in the quarter ended June 30 were 87% less than those of the year-earlier period.

George Romney, president, said for the first nine months of the fiscal year, to end Sept. 30, net loss from operations was reduced by two thirds from that of the corresponding period of fiscal 1956. Based on reported figures for last year, this would indicate AMC lost about $1,200,000 in the latest quarter and about $6,500,000 for the nine months ended June 30.

The company as a whole was in the black in June, Romney stated. While the appliance business deteriorated, he believes manufacturers have recognized the situation and are revising production and distribution policies to remedy it. He added AMC is curtailing "expenditures and activities" in appliance and special products area.

Johnson Service Co. reported billed sales slipped slightly in the first six months and net profit dropped. Sales totaled $18,165,299, compared with $18,447,397 in the same 1956 months, according to J. A. Cutler, president. Net income was $1,786,136, compared with $2,056,569 for '56's first half.

Cutler said profit decline was due to increases in labor and material costs, plus substantial increase in overhead of operating.

Emerson Electric Mfg. Co.'s consolidated report for the quarter ended June 30 showed net sales of $17,373,779 as compared with $15,515,358 for the like 1956 period. Net income amounted to $701,875 as against $649,867 for the same period a year ago.

For the first nine months of the 1957 fiscal year, net sales totaled $49,440,463 as compared with $42,563,106 for the like 1956 months.

W. R. Persons, president, said that fiscal fourth quarter commercial sales are "expected to be somewhat affected by the softness which has been experienced in the demand for fans and air conditioners." He thinks earnings will be "satisfactory, following the normal seasonal trend."

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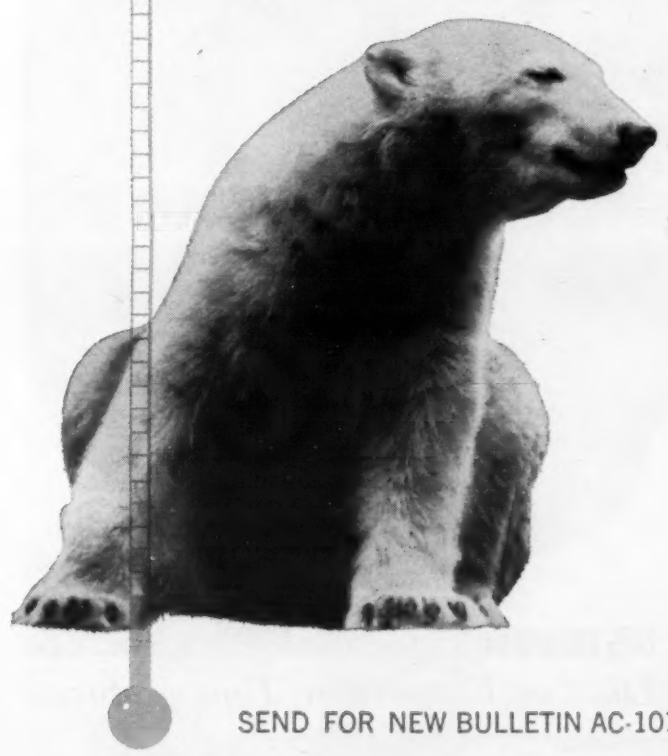


All-weather operation of air conditioning and refrigeration units is automatic—no manual changeover is required—when the exclusive Limitrol modulating valve is used with Halstead & Mitchell's air-cooled condensers. The Limitrol effectively maintains balance between condenser and compressor under all outdoor ambient conditions by regulating condenser capacity. And winter problems with water-cooled systems are avoided.

H&M's air-cooled condensers with exclusive Turbu-Flo fin design allow peak Btuh at the evaporator. The embossed, streamline pattern provides better air wash, reducing air film resistance, and improving heat transfer by up to 15%. Wide fin spacing assures rated capacity longer. Service costs are less, too.

Installations involving many condensing units are made much easier and less costly. Halstead & Mitchell will provide multiple circuiting to meet specified requirements (if requested) at no extra charge—on all 12 models.

Call your wholesaler for more information or write Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.

SEND FOR NEW BULLETIN AC-101

'Turbu-Flo air-cooled condensers for remote installations'

Two AC-20's and one AC-25 handling air conditioning requirements for all refrigeration equipment for a supermarket.

HM Halstead & Mitchell

Refrigerated Trailer Keeps Monkeys Healthy for Polio Vaccine Firm

DETROIT — A huge truck-trailer, mounting a reverse-cycle "Thermo-King" refrigeration unit, is being used by Parke-Davis & Co., pharmaceutical firm, to transport live monkeys on the last leg of a 12,000-mile trip from New Delhi, India, to its biological farm at Rochester, a town about 30 miles from here.

The monkeys, of the Rhesus variety, are used by Parke-Davis in production of poliomyelitis vaccine. They are available by the thousands in India, but only healthy, robust monkeys can be used and of course must be as fresh and healthy when they arrive as when they left India.

Select monkeys — inspected and cleansed—are loaded aboard an airliner at New Delhi. Trained handlers accompany each plane load. Then, after stops at Pakistan, Rome, Amsterdam, and New York, the simian travelers land at Detroit-Wayne Major airport. Special cages, frequent changes of water and food, and other careful handling procedures keep them in top shape during the trip.

Arriving at Detroit, the monkeys, four in a cage, are transferred to the specially built trailer which is kept at 78° F. winter or summer, by the Thermo-King unit, for the 45-mile trip to Rochester.

Kidneys from these monkeys are necessary for production, and the finished vaccine is tested on other monkeys to assure its safety.

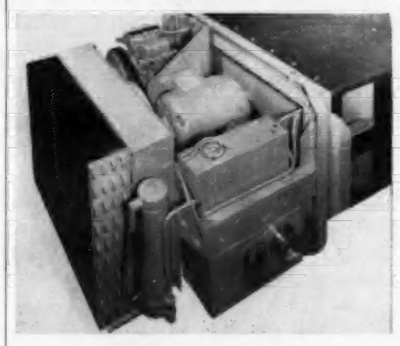
ABOVE: Monkeys enjoy constant 78° F. temperature in special cages. Outlet at top left of picture provides heating or cooling as the season requires.

RIGHT: Trailer, equipped with Thermo-King reverse cycle refrigeration unit, waits for monkeys to be unloaded from plane which has brought them from India to Detroit.

Truck Unit Claims Freedom from Belt Slippage, Breakage

CHICAGO — Featuring what is termed "an exclusive" hydra-electric drive to prevent belt slippage, glazing, and breakage, Coldmobile Div., Union Asbestos & Rubber Co. here has introduced a HNE-100 hydraulic drive truck refrigeration unit.

The patent-applied-for drive incorporates a controlled-engagement electric clutch mounted on the compressor and timed



COLDMOBILE HNE-100.

to relieve initial shock loading caused by thrust of hydraulic fluid, the company pointed out. HNE-100 includes cantilever truss mountings to carry the weight of the condenser and evaporator coils, and is claimed to give better balance and rigidity to the nose mounted installation.

Coldmobile said it limited production and sale of the hydraulic drive truck refrigeration equipment in order "to carefully note" performance of units in the field. After field experience and customer comments, the firm formed a basis "upon which the unit was designed."

Power-pack mount of the unit is said to assure a minimum of labor to maintain or service it. Single mounting supports electric motor, compressor, and fluid motor, it was explained.

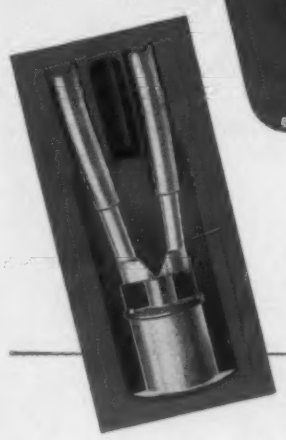
Automatic defrosting of the evaporator coil can be achieved and the unit includes a "full" 2-hp. plug-in motor. It has a slide-out electric control panel.

It is "not meant to supersede" Coldmobile's standard L series truck refrigeration equipment, but "to supplement" it.

Model HNE-100 was designed for insulated truck bodies up to 18 ft. long, requiring temperatures of 35-45° F., where constant refrigeration is needed.

...whether you need

2 CIRCUITS *or* 2 DOZEN!



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regardless of Load or Evaporator Temperatures!

Because Only Sporlan with its Famous Interchangeable Nozzle can offer you ALL THESE IMPORTANT ADVANTAGES

It is perfectly adaptable to all refrigerants. The nozzle is removeable for visual, air, or test wire inspection of each individual circuit at both the distributor and coil connection. The nozzle selection can be made at the factory or on the job. The coil manufacturer can stock coils with the distributor already attached and select the proper nozzle later for the conditions specified. The capacity can readily be varied on the job if the application changes or conditions are not as expected.

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So... If you are a packaged unit or coil manufacturer, contractor or service engineer... The Sporlan Refrigerant Distributor, with over 15 years of Peak Performance Leadership, is the one for you!
Better still... Install the famous Sporlan combination of Catch-All, Solenoid Valve, and Thermostatic Expansion Valve along with it and get Peak Performance right down the line!

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For more information about products advertised on this page use Information Center, page 20.

Offers 3 Methods To Cut Cooling Loads on Small Dwellings

Shading Major Glass Areas, Adequate Attic Ventilation, Maximum Use of Ceiling, Wall, Foundation Insulation, Munger Says

MIAMI, Fla.—Three methods of reducing cooling loads on dwellings have been found to be the most beneficial for small dwellings, declared G. R. Munger, Owens-Corning Fiberglas Corp., in discussing "The Comparative Effects of Different Load Reducing Methods" at the Air Conditioning Conference held during the American Society of Refrigerating Engineers annual convention.

These are (1) shading of major glass areas, (2) adequate attic ventilation, and (3) maximum use of ceiling, wall, and foundation insulation, said Munger.

Heat Gain Through Glass

Heat gain through glass can be more than 12,000 B.t.u.h. at peak conditions in an average house. But with proper planning, this can be reduced to less than 4,000 B.t.u.h.

Facing major glass areas north and south, providing adequate roof overhang, and taking advantage of natural shading doesn't cost anything, but many new homes don't provide this. However, heat gain can be reduced by double glazing, heat absorbing glass, and sunscreens.

Table 1 was presented by Munger as giving some comparative numbers to illustrate the relative merits of different ways of cutting down on heat gain through glass. These figures are approximate relationships rather than absolute values.

	Sunlit	Not Sunlit
Single Glass	100	33
Double Glazing	73	22
Heat Absorbing Glass	68	24
Double Glazed Heat Absorbing Glass	51	17
Sunscreen on Single Glass	35	17
Sunscreen on Double Glazing	26	12
Sunscreen on Heat Abing Glass	24	12
Sunscreen on Double Glazed Heat Absorbing Glass	18	9

It is difficult to measure the exact effect of attic ventilation, Munger said. Attic ambient temperature is not an index of the ceiling heat gain as it is of heat loss. The effect of radiation from roof sheathing is an important point to consider.

Attic Temperature Differential

In some of its own test work Owen-Corning Fiberglas found that the effective temperature difference across the ceiling in summer, resulting from roof sheathing radiation, may be more than twice the design temperature difference.

Munger quoted one authority for the observation that "it is safe to assume that under favorable conditions where the building is so constructed and oriented to take advantage of outside air currents, the equivalent temperature differentials through the roof may be reduced by 10%. This reduction may be as high as 25% for forced ventilation attics."

In the matter of insulation, Munger said that a good rule to follow for the air conditioned home is the electric industry's 6-4-2 rule. That is, 6 in. of insulation (mineral wool equivalent) in the ceiling, 4 in. (nominal 3 in. mass insulation with insulating sheathing) in the walls, and 2 in. perimeter insulation.

Contrary to popular opinion, said Munger, it is the last inch of insulation, rather than the first, which may be the most important in reducing cooling load. He claimed that additional insulation will always reduce operating cost.

A house insulated to meet current FHA requirements will have a lower operating cost and may require smaller heating and cooling equipment than a house with no insulation, said Munger.

However, he claimed that the additional insulation necessary to meet "comfort engineering" standards frequently makes the difference of at least one size in both heating and cooling equipment, and that extra insulation, at little or no increase in application labor cost, can reduce equipment cost more than $250.

Over-all economics of adequate insulation can be accurately estimated, from extensive studies that have been made, Munger said. He presented figures showing that in Chicago, for example, for an added insulation cost of $152.45, there would be a possible combined equipment savings of $280, and a probable saving of $30.40 in yearly operating costs.

Also presented were figures showing that double glazing, at an extra cost of $225, could bring about possible reductions in the winter heating load ranging from 10,500 B.t.u.h. in Minneapolis, to 7,050 in Atlanta, and average reduction of 3,000 B.t.u. in the cooling load.

Sunscreening, performing at its maximum, could conceivably reduce an initial extremely poor situation of 12,000 B.t.u.h. to 4,000 B.t.u.h. by screening one-half the glass area at 75 cents per sq. ft.

One other aspect of load reduction, in the winter aspect, is that it can help to extend the fossil fuels supplies, which will start being depleted within the next half century.

Since space heating consumes nearly half of our fuel energy, and we have the technology to reduce this consumption about 25%, it is possible to conserve more than 10% of total fuel reserve by improving the thermal design standards of buildings, Munger declared.

A.O. Smith Asks Stockholders To OK Common Share Increase

MILWAUKEE—To pave the way for a two-for-one stock split, stockholders of A. O. Smith Corp. will be asked at a special meeting here Sept. 13 to approve an increase in authorized common stock from 1 million to 2.5 million shares of stock.

Issuance of one additional share for each share held would be made Sept. 20 to holders of record Sept. 16, it was explained. Directors would also declare a dividend of 40 cents on the new common stock, plus a 2% stock dividend, both payable Nov. 1 to holders of record Oct. 1, executives further pointed out.

At the moment, the firm is paying dividends at the rate of 70 cents a share quarterly, it was explained.

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keeps you in profit position

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Suburbanaire® line favored where cost must be considered along with quality

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by

Jimmy Hatlo

THIS SHOULD BE IN ITALICS! BREAK THIS PARAGRAPH HERE! THIS LINE SHOULD BE UP THERE! CHANGE "I" TO "WE"...TAKE THIS PREPOSITION OUT... AND ONE MORE THING...
6-26
BIGDOME HAS HIS SEC DO THAT VERY IMPORTANT LETTER OVER AND OVER TILL IT'S JUST RIGHT...
SO FINALLY AT 5.45 P.M.....IT'S JUST HOW HE WANTS IT, DOES HE SEND IT OUT? DUN'T ASK!!
I HOPE THERE'S NO MORE CHANGES...I'M LATE FOR MY DATE NOW...
MMPH..UMM...DEAR MR. MONGOOSE...YOURS OF THE...WAIT! TELL YOU WHAT...CALL HIM AT THE TOWN CLUB... I'LL SETTLE THIS RIGHT NOW...
THANX AND A TIP OF THE HATLO HAT TO "A SEC" NEW YORK
JIMMY HATLO

An Ill Wind Blew Up Demand For Dehumidifiers

SWAMPY and swamping rains smacked wide areas of our country this summer—from Texas to Chicago, and points East. They ruined crops and damaged property. For dehumidifier makers and sellers, however, these sudden sharp rainfalls turned out to be unexpectedly good business.

Consequent dampness prompted many householders to buy dehumidifiers in order to protect their furniture, books, and other personal properties in their basements (where nearly all dehumidifiers are installed).

Daily, it should be noted, these relatively low-priced refrigeration products drink up 2 or 3 gals. of water from the air in any room—moisture which otherwise might rust pipes, crumble plaster, warp wood, crack walls, mildew books, or work havoc otherwise.

Like room air conditioners, nearly 60% of all dehumidifiers are sold between June and September, dealers tell us. Distributors and retailers entered the summer of 1957 with an inventory of 90,000 units in stock—an estimated 70,000 more than at the beginning of 1956. And that was quite a worry for awhile.

Thanks to heavy summer rains, however, dehumidifier stocks are almost depleted. So, manufacturers are boosting their dehumidifier production plans for next year.

It is estimated that total sales this year may pass 350,000 units—approximately $45 million worth of dehumidifiers at retail.

An optimist as well as enthusiast is President A. R. Benua of Ebco Mfg. Co., producer of Oasis and Ebco dehumidifiers. According to Mr. Benua, 1956 dehumidifiers tallied a record 275,000 units, valued at $36,025,000.

That nearly tripled the 96,000 sold in 1955, Mr. Benua (who might be called "Dean of the Dehumidifiers") notes. And he feels sure that both 1957 and 1958 again will set new sales records for this useful device.

In a typical dehumidifier, moisture-laden air is drawn from a room into the machine by a fan—then circulated over evaporator coils which are cooled by circulation of Refrigerant-12. This moisture condenses into water on coils and drains off into a bucket or exits through a permanent pipe drain. The newly dried air is discharged at room temperature, or a little bit cooler than that. Hence, a dehumidifier does have an air conditioning effect of sorts.

Current dehumidifier prices range from about $70 for stripped models up to $175 for automatic units with convenience features.

Inasmuch as most dehumidifiers sold go into basements, eye-appeal has not been considered important, hitherto. Whirlpool now offers a highly-styled model, however, and pioneering Frigidaire suggests that its humidifier can be used as an end table in a living room.

Moreover, as more and more basements are converted into recreation rooms, style is becoming a significant selling factor.

Operating costs are infinitesimal, Each dehumidifier adds about three fourths of a kilowatt hour to a family electric bill every 24 hours of operation (less than half of what it takes to run an ordinary floor lamp over the same period).

Convenience, then, groups with economy and insurance (of mildew-threatened valuables) as sales points.

Outside the home, dehumidifiers have wound up in a wide assortment of uses. Examples:

They are used to supplement oversized all-year residential air conditioning systems (which don't cycle often enough to keep humidity low).

Commercial chicken hatcheries employ dehumidifiers to keep baby chicks dry, which then become less susceptible to disease.

Units have been installed in restaurant walk-in coolers to prevent frost, and to cut down the chances of mold forming on food stored therein.

Painters and plasterers have installed dehumidifiers in hotel rooms to remove moisture and cut drying time. Rug cleaners take them into homes and into hotels for the same reason.

This deal saves a lot of money for hotels and motels because it makes renovated rooms available for profitable occupancy much sooner than heretofore.

All in all, a dehumidifier is a mighty handy item. Unfortunately its sales opportunities too often are neglected by manufacturers and dealers alike.

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AIR CONDITIONING & REFRIGERATION NEWS

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'The Conscience of the Industry'

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"If you think the editor sometimes makes a mistake in what he gives you to read, you ought to see the mass of stuff from which he saves you."—*Karl A. Bickel*, former president of the United Press.

OFF THE CHEST

SEEKS DATA FROM TRANSPORT COOLING FIRMS

The Madras Services
Madras 2, India

Editor:

While going through the Refrigeration and Air Conditioning Directory, we have noticed that a number of firms are manufacturing Automobile Air Conditioning and Bus and Railway Air Conditioning Plants.

Since we have a number of our fleet owners desirous of installing Air Conditioners in their buses, we shall appreciate it very much if some of these firms will send us full details of their manufactures to enable us to proceed further with the matter.

Manager

IBR CLAIMS HYDRONIC HEATING SHIPMENTS UP

The Institute of Boiler and Radiator Manufacturers
New York, N. Y.

Editor:

One of our members has sent me Page 12 from your July 1 issue, and it is gratifying to have you give publicity to our activities in connection with Hydronic heating and cooling systems. There are a couple of comments which I would like to make on the article.

In the fourth paragraph, you state that installations by the hot water and steam heating industry veered off in 1956. The facts are as follows:

Low pressure heating boilers shipped in 1956 totalled 375,000, which was a slight increase over 1955 and represented the largest total of such boilers shipped in any year since 1928. Government figures covering furnace shipments follow:

1956	1,264,030
1955	1,348,000

thereby showing somewhat of a decrease.

The number of boilers and

(Concluded on next page)

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(Concluded from preceding page)

furnaces which are used in new installations as compared to those used for repairs or modernization cannot be accurately determined. Considerable research on our part, however, has indicated that in 1956 there were approximately 283,000 boilers used in new residential installations as compared to 713,000 furnaces. The housing and Home Finance Agency credits the life of boilers as being 40 years as compared to 15 years for furnaces. For this reason, it is reasonable to assume that a higher percentage of boilers shipped each year are used for new installations as compared to furnaces.

The other comment is your reference to "Wet-Heat-Type Furnace Manufacturers Strive to Revive in Air Conditioning." I am sure your use of the term "furnace" as applied to boilers was an over-sight on your part, as the standard nomenclature throughout the industry differentiates between boilers which use liquid as the heating medium and furnaces which use air.

Also, the figures cited above would not indicate that the industry is in need of being revived, because during recent years the boiler industry has been making consistent progress in obtaining a larger share of the residential heating market.

R. E. FERRY,
General Manager

DR. SHLUMBOHM SINGS ROOM COOLER BLUES

Chemex Corp.
New York, N. Y.

Editor:

Say, I just read your editorial of Aug. 12. Congratulations.

Personally I have had terrifying experience with window air conditioners: One $200 1-ton unit required: $185 to be paid to the landlord for a wire from the meter to a ground floor room. Plus $30 installation costs to the dealer.

The other required $30 to the dealer plus $60 wiring for pulling a wire from one room of a modernly wired house to the next room. The unit contained a fan motor, which was completely inaccessible, except by serviceman at $6/hour, with the direction: Oil every six months. . . .

Anyhow, Life can be BTU-tiful. . . .

DR. PETER SHLUMBOHM,
President

TEXAN TEMPTS EDITOR WITH TEXAS PASSPORT

Texas Electric Service Co.
Ft. Worth, Texas

Editor:

We appreciate the excellent job you and your newspaper are doing in being a source of business and technical information, a conscience to those who would blame others for all their troubles, and on the other hand being a "newsy" newspaper.

We wish to particularly thank you for the recent article on "Electric Service for Residential Systems" by Albert S. Anderson of Ebasco Services, Inc., in the Aug. 5 edition.

You know first hand that we are one of the more progressive air conditioned cities, and this problem has needed this type of explanation for some time.

Please send us 20 reprints of this article if they are available. If they are not available, please give us your permission to reprint the article ourselves. Keep up the good work, and we might even send you a passport to Texas.

M. B. MOBLEY,
Sales Promotion

P.S. You know the latch string is always out with or without a passport. Come on down to see us.

Kenneth Bird Joins Arrow-Risco In Reorganization Move

LOS ANGELES—Kenneth J. Bird has joined Arrow-Risco, Inc., local refrigeration, air conditioning, and heating wholesaler, as executive vice president, Huntington W. Small, newly-elected president, announced.

Bird was formerly vice president and general manager of Ace Carton Corp. of Calif.

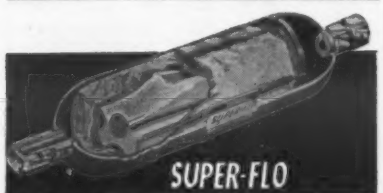
In the firm's reorganization, J. W. Frantz becomes vice president, Harold B. Marvin, controller with H. W. Small, J. W. Frantz, R. L. Vincent, and K. J. Bird directors, it was added.

Purchasing and merchandising activities are under the direction of J. H. Turner with branch warehouse being maintained in North Hollywood and San Gabriel. Avon Bathker is manager at North Hollywood, Erven Melling at San Gabriel. A former location in Glendale has been closed.

Small explained the second phase of the reorganization would be concerned largely with merchandising policies with considerable shifting of emphasis in types of units handled. The trend will be toward expansion in refrigeration products and those where technical "know-how" is a sales factor, he pointed out.

Authorized capital of the refinanced company has been increased to $400,000, half of which is common stock, the balance equally divided between two classes of preferred, only a part of which has been issued so far.

The firm's approximate net worth has been upped to $150,000, Small said.



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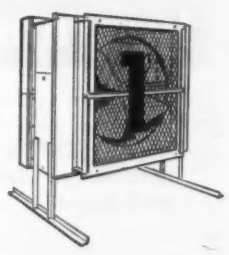
For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

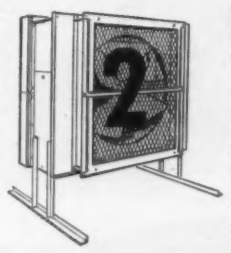
ONLY KRAMER UNICON + WINTERSTAT* GUARANTEES ALL 4

MAXIMUM LIQUID PRESSURE AT EXPANSION VALVE IN WINTERTIME



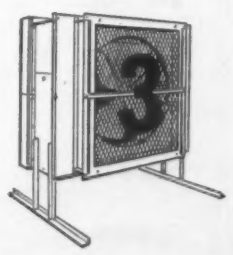
Only the Kramer UNICON plus WINTERSTAT guarantees the full refrigerant pressure *at the expansion valve* for full cooling capacity — even at below 0°F outdoors — *automatically!*

MAXIMUM SUMMER CAPACITY WITH PATENTED WINTERSTAT



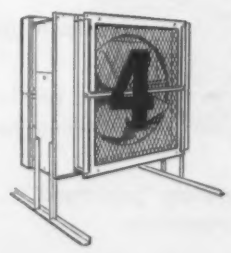
Only Kramer UNICON plus WINTERSTAT guarantees maximum condensing capacity in summer. In hot weather, the patented WINTERSTAT is out of the refrigerant circuit, permitting normal drainage from the condenser without restriction. This assures maximum condensing capacity in summer — *automatically!*

PROMPT DEFROSTING AT ANY OUTDOOR TEMPERATURE



The use of UNICON plus WINTERSTAT makes Kramer THERMOBANK the only low temperature system that can guarantee operation and complete defrosting at any outdoor temperature—even 0°F or lower — *automatically!*

IMMEDIATE COMPRESSOR START-UP REGARDLESS OF OUTDOOR WINTER TEMPERATURE



Only Kramer UNICON plus WINTERSTAT (using modification #1) ensures positive and immediate compressor start-up with pressurestat operating the system, regardless of outdoor winter temperatures at the UNICON and regardless of length of compressor lay-off — *automatically!*

**UNICON is a remote type air-cooled condenser WINTERSTAT is a year 'round automatic head pressure control*

WRITE FOR BULLETIN U-210-L

KRAMER TRENTON CO. • Trenton 5, N.J.

43 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

Gas-Fired Boiler Stands 33-in. High

———KEY NO. G-920———

NEW YORK CITY—A new gas-fired boiler claimed to combine high capacity with unusually compact dimensions has been announced by the Plumbing & Heating Div. of American-Standard.

The fully automatic boiler, designated G-2, stands 33½ in. high and "requires minimum floor space, making it ideal for all residential installations where space is at a premium," according to the announcement.

Five sizes—from three to seven sections—are factory assembled, packaged, and crated. The circulator, controls, piping, and accessories are factory installed and pre-wired—all located on the left and front of the unit.

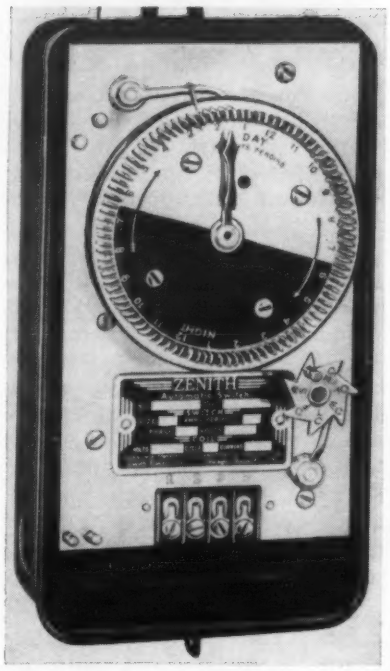
Introduces Cooler Wall Finish

———KEY NO. G-921———

CHICAGO—A new type of cooler and freezer wall finish has been announced by the Adhesive Products Dept. of Swift & Co.

Specially designed for finishing board type insulation in low temperature freezer and cooler rooms, the material is designated as Swift's "Adcote."

The material is normally applied by trowel although successful applications have been made by brushing and by spraying with special spray equipment.



Time Switch Dial Has 15-Min. Settings

———KEY NO. G-922———

CHICAGO — Completely automatic control of intermittently operated equipment of all types is provided by a new and versatile 24-hour time switch developed by Zenith Electric Co.

Switch will handle as many as 48 "on" and 48 "off" operations in one day.

A control dial, scaled in 15-minute graduations is used to set up a daily operating schedule. Running periods are set by sliding self-contained, non-removable trip levers in or out on the dial. The switch will repeat the entire schedule automatically each day.

A calendar cutout device which will make the switch completely selective for all seven days of the week is available as an accessory. With this device, the switch makes provision for non-working days, the firm pointed out.

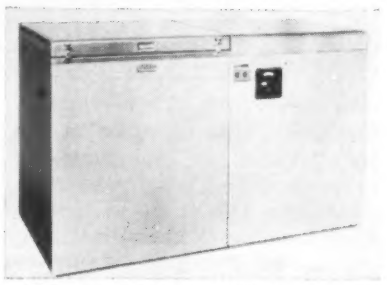
Develops Low-Temp Production Chilling Unit

———KEY NO. G-924———

CAMBRIDGE, Mass. — A new low temperature chilling machine has been introduced by the Harris Refrigeration Co. here.

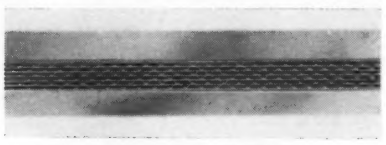
Designed for production chilling, the machine is used to achieve complete stability and maximum hardness in the metallurgical processing of metal parts, the company said.

Among the latest materials adaptable to this type of processing are the new precipitation-hardening stainless steels which provide higher strength/weight properties. These materials have already found wide application for aircraft and missile parts working up to 800° F.



Known as Model 10L-2, the machine has 10 cu. ft. capacity with a chamber 30 in. long by 24 in. wide by 24 in. deep. Its outside dimensions are 76 in. long by 35 in. wide by 42 in. high. Its temperature control ranges from 0° to -150° F.

Slot Diffuser Directs Air 90° from Face



———KEY NO. G-925———

TUCKAHOE, N. Y. — Universal Diffuser Corp. recently announced a new type of long slot diffuser sold under the trade name of "Line-Air."

This slot diffuser has the advantage of being able to direct the air into the room at approximately 90° to the face of the diffuser, the company claims. The Line-Air can be placed directly onto the duct in very long continuous strips without requiring equalizing deflector blades. Air leaving is broken up into counter-current jets, thus preventing stratification.

Line-Air: 1. Prevents cold air from spilling to the floor; 2. the cold air is tempered through entrainment; 3. Line-Air eliminates stratification, the firm stated.

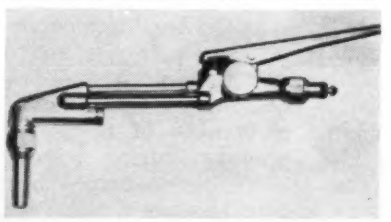
Sump Pumps Feature Nylon Impellers

———KEY NO. G-926———

ASHLAND, Ohio — Two "new Design" Sump Pumps, featuring nylon corrosion resistant impellers and stainless steel shafts, have been introduced by the F. E. Myers & Bro. Co. here.

The new nylon impeller used in both pumps has shown in tests, according to the manufacturer, to offer high resistance to corrosion and abrasion. The impeller weighs less than metal impellers of similar size and is free-floating, resulting in a less load on motor bearings.

A conical type suction strainer on both pumps is designed for ease in cleaning without removing piping.



Cutting Attachment Weighs 13 Oz.

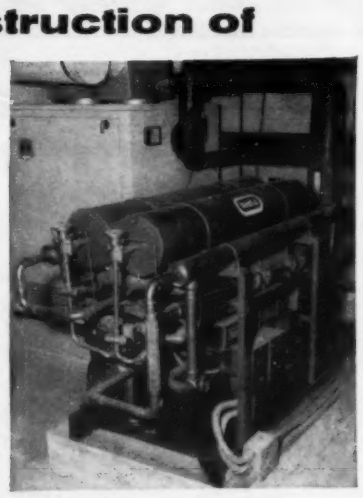
———KEY NO. G-927———

NEW YORK CITY — A new light-duty oxyacetylene cutting attachment, the "Airco" style 1490, is now available from Air Reduction Sales Co. This unit attaches to the Airco style 400 lightweight welding torch.

Weight of the attachment is 13 oz., and it is 9½ in. long.

EL RANCHO MOTEL, HOT SPRINGS, ARK.

the Space-Saving Advantages and Inner-Fin® All Copper Construction of a heat-x 'PC' PACKAGE CHILLER Sold This Job



And this has been the experience of contractors all over the country. Customers are easily "sold" on these units . . . appreciate the sound advice of contractors who recommend them. Here's why:

SPACE SAVING — Patented Inner-Fin® construction makes Heat-X 'PC' Package Chillers the most compact on the market.

RELIABILITY — Non-ferrous construction of all water passages eliminates danger of corrosion. Traditionally rugged Heat-X construction assures long life.

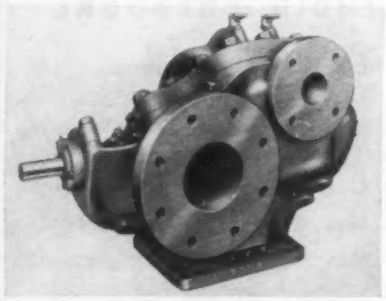
'PC' Chillers also offer the *contractor* several advantages (in addition to consumer satisfaction):

EASE OF HANDLING — Units are lighter in weight and smaller because Inner-Fin® construction permits more chilling capacity with less bulk.

EASE OF INSTALLATION — Units are completely "packaged" . . . require only water and electrical connections.

'PC' Package Chillers are available in 2 HP through 100 HP models. Request complete catalog.

HEAT-X, Inc.
A Subsidiary of Dunham-Bush, Inc.
BREWSTER • NEW YORK



Centrifugal Pumps Split Diagonally

———KEY NO. G-923———

AURORA, Ill. — Aurora Pump Div., New York Air Brake Co. has developed a line of diagonally split case centrifugal pumps suited to many applications, among which is boiler feed service as well as hot or volatile liquids applications.

These pumps, while retaining the advantages of the horizontally split case pumps embody advantages inherent in the 45° casing split. The features, in common with horizontally split case pumps, are able to remove the entire rotating element without disturbing the piping or the pump-motor-base alignment, the manufacturer said.

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Information Center

For *more information* on What's New products, current literature and catalogs available, equipment advertised in AIR CONDITIONING & REFRIGERATION NEWS use Key Numbers where designated or specify products advertised and we'll see that you receive this information promptly.

Products Advertised
(list name, page, and issue date)

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What's New or Current Literature Available

Key No. . . . . Key No. . . . . .
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For more information about products advertised on this page use Information Center, page 20.

Portable Hand Swivel Drill Motor Produced

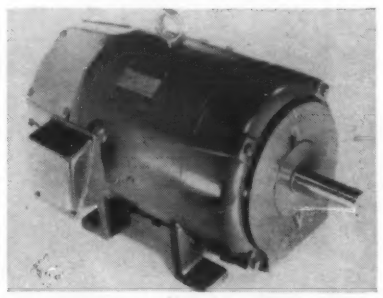
—KEY NO. G-928—

DETROIT—The new Truco hand swivel drill motor is a compact, portable combination designed for high-speed drilling in all types of masonry materials including reinforced concrete. It is a product of the Water Swivel Div., Wheel Trueing Tool Co. here.

The combination consists of a heavy-duty, 1,000 r.p.m. drill motor with integral water swivel which supplies water to the cutting face of the diamond drill to flush away cuttings. The water fitting may be connected to any ordinary supply line and on jobs where running water is not available, it may be hooked up to a portable, pressure water tank.

Ten ft. of heavy-duty electric cable are supplied. The unit may be plugged into any line with 110 v., 60 cycles or less and will give high efficiency drilling with bits from 1 to 3½ in. o.d.

Offers D. C. Motor, Generator Line



—KEY NO. G-9210—

PITTSBURGH—A new line of direct-current industrial motors and generators known as the "Life-Line" H series has been announced by the motor department of Westinghouse Electric Corp.

The new motors and generators have dripproof enclosures as standard and bear NEMA Class B ratings; they span motor ratings from 1 to 150 hp. and generator ratings from ¾ to 100 kw.

Among features available for the first time in standard industrial motors and generators are a high-temperature silicone insulation system in machines rated to operate within Class B temperatures; a controlled ventilation system that draws air from the drive end, distributes flow positively throughout the machine, and expells it at the commutator end; and a new housing construction which enables the dripproof machines to serve many applications which ordinarily require splashproof equipment.

Instrument Measures Gas Mixture Moisture

—KEY NO. G-9211—

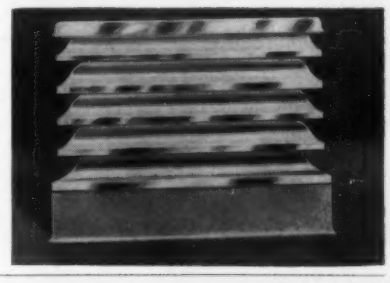
PASADENA, Calif. — A new, portable, low-cost instrument for measuring minute quantities of moisture in gaseous mixtures is now available from Consolidated Electrodynamics Corp. here.

Called type 26-301 "Moisture Monitor," it is expected to solve many problems encountered in research, quality control, and process efficiency.

It will measure water content accurately down to 1 p.p.m., and permit precise meter readings over the full-scale range of 0 to 1,000 p.p.m. in five steps.

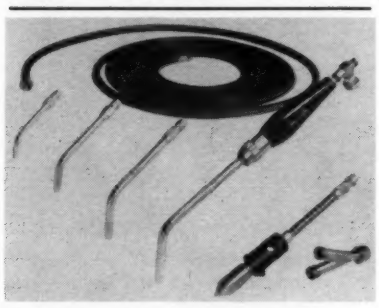
Adds Extruded Aluminum Outside Louver

—KEY NO. G-9212—



WATERLOO, Iowa—A new line of extruded aluminum outside louvers has been announced by Titus Mfg. Corp. here.

New louvers feature an "S"-shaped blade which allows greater free area—yet retains characteristics necessary for maximum weatherproof effectiveness, it was stated.



Torch Handle Has Needle Valve

—KEY NO. G-929—

NEW YORK CITY—Most precision model air-acetylene outfits manufactured by Linde Air Products Co., Div. of Union Carbide & Carbon Corp., are now supplied with the "Prest-O-Lite" No. 403 torch handle.

This handle is equipped with a needle valve to meet the requirements of those who prefer a valve at the rear of the handle and have no need for a pilot flame.

REFRIGERATION FUNDAMENTALS

Newest Master Service Manual

Latest vital information for every beginner in refrigeration. Gives the expert a handy, pocket-size reference on important facts. Seventy-eight illustrations, 17 tables in this 112-page book give you the facts quickly and easily.

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SOLD

Dealers have found that one of the biggest drawbacks to sales of residential heating-cooling combinations is the problem of *noise*. Now progressive manufacturers are supplying dealers with larger units equipped with Utility's new "Big Boy" Direct Drive Blowers. "Big Boy"—a burly brute of a fan— is packed with *quiet* power that proves this equipment *can* be sold when it has the added sales appeal of silence.

With airflow capacity great enough to handle up to 125,000 BTU—3-ton heating-cooling combinations, "Big Boy" delivers approximately 1,400 to 1,500 CFM at a static pressure of 0.80" WG. It's the most quietly powerful direct drive blower now available.

Utility was first with a line of silent direct drive blowers with Neoprene hubs. Now Utility is first again! Here is a silent direct drive blower with Neoprene hubs and super-quiet permanent split capacitor motor. Why not get together with your manufacturer on the proposition that silence is a golden opportunity for increased sales—for him, for *you?* Remember only Utility's "Big Boy" Direct Drive Blower gives your equipment the power it needs *and* the silence that sells it.

Check with Utility for blowers and blower parts in any combinations. You'll find that . . .

YOU CAN'T MATCH UTILITY FOR PRODUCT AND PRICE!

UTILITY FAN CORP.

911 East 59th Street, Los Angeles 1, California

Manufacturers of heavy and standard duty blowers for heating, air conditioning and ventilating installations. Producers of blowers and blower parts for original equipment manufacturers. Write for catalogue data.

UTILITY

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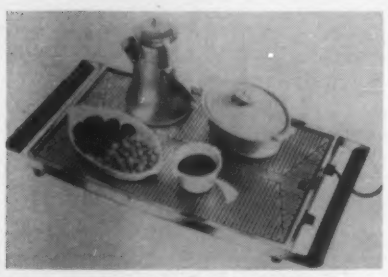
Redesigns Electric Food Warmers In 4 Sizes



—KEY NO. G-9213—

CHICAGO — Salton "Hotray" electric food warmers are now made with the silvery shatterproof radiant glass in new "Pointex" finish with handles of solid walnut in rubbed oil finish, according to the manufacturer, Salton Mfg. Co., Inc.

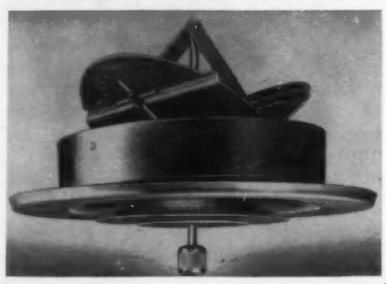
Four sizes of Hotray underwent this redesign: the "Elite" which is 16 by 7½ in., the "Gourmet," over-all size 18 by 9¼ in., the "Patio Master," over-all size 22 by 11 in., "Epicure," 26 by 12¼ in.

Markets Friction-Controlled Butterfly Damper

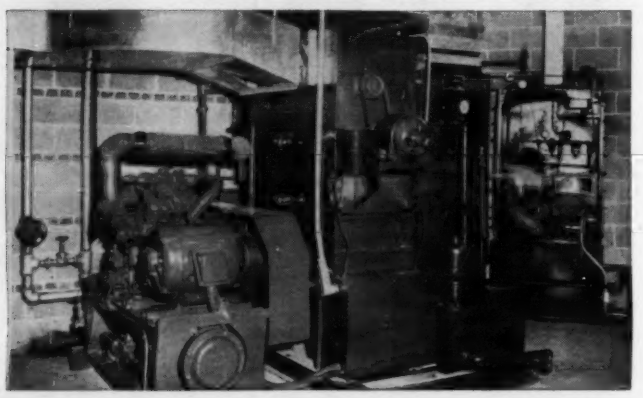
—KEY NO. G-9214—

TUCSON, Ariz.—A new friction-controlled butterfly damper is now being marketed by Krueger Air Conditioning Corp. for its #200 series round ceiling diffuser.

The new design completely eliminates the standardized spring loading and pull chain control of the damper. A central shaft with knurled handle gives full 90° control of both damper leaves.



DRY AIR...
PRECISELY as you want it



NIAGARA CONTROLLED HUMIDITY AIR CONDITIONING

This method removes moisture from air by contact with a liquid in a small spray chamber. The liquid spray contact temperature and the absorbent concentration, factors that are easily and positively controlled, determine exactly the amount of moisture remaining in the leaving air. Heating or cooling is done as a separate function.

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Best and most effective because... it removes moisture as a separate function from cooling or heating and so gives a precise result constantly and always.

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Most flexible because... you can obtain any condition at will and hold it as long as you wish in either continuous production, testing or storage.

Easiest to take care of because... the apparatus is simple, parts are accessible, controls are trustworthy.

The cleanest because... no solids, salts or solutions of solids are used and there are no corrosive or reactive substances.

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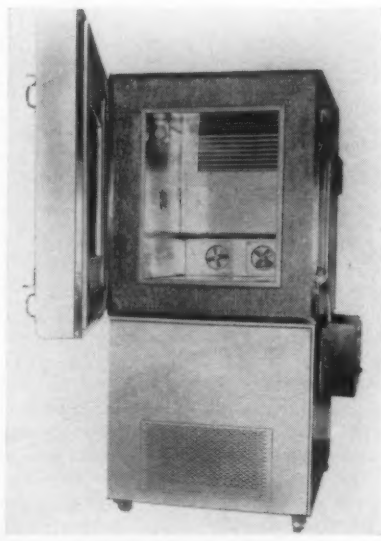
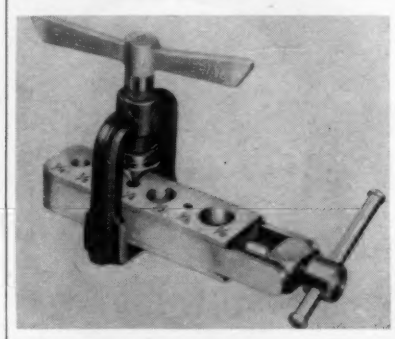


Test Chamber Has Full 10-Cu. Ft.

—KEY NO. G-9215—

UNION, N. J.—A new temperature test chamber, the Tenney series 10, having a full 10-cu. ft. work space has been announced by Tenney Engineering, Inc. here.

The low-cost chamber incorporates single-stage and cascade refrigeration systems with fully hermetic compressors and fitted with air-cooled condensers.



Tool Chromium Used On Flaring Cones

—KEY NO. G-9216—

CHICAGO — Tool chromium, having a hardness closely approaching that of diamond and claimed to surpass that of any other metal, is now being used on all cones in flaring tools produced by the Imperial Brass Mfg. Co.

Primary advantage of the development is that the finish of hard chromium reduces torque requirements for flaring.

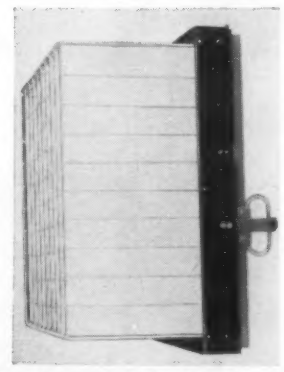
Can Use After-Filter with Permanent Type

—KEY NO. G-9217—

LOS ANGELES — Introduction of a new type after-filter for use with permanent filters where extra air cleaning efficiency is required was recently announced by Farr Co. here.

HP filter, completely flameproof, consists of deep folded pleats of special media permanently attached to chipboard reinforcing panels. The pleating provided an effective filtering area of 9-to-1 over face area.

The filter fits into a special wire retainer which in turn attaches to most existing filter holding frames on the downstream side.



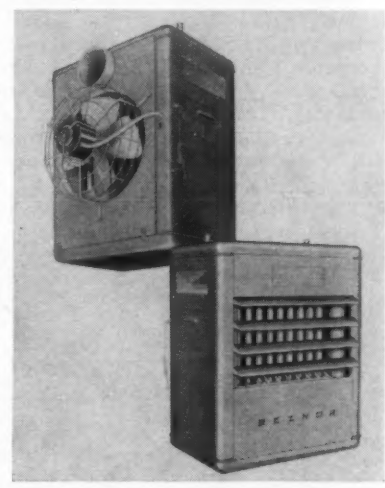
Modernizes Suspended Gas Unit Heater

—KEY NO. G-9218—

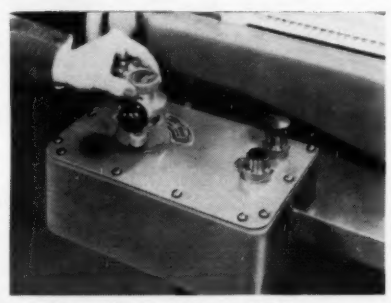
MERCER, Pa. — A suspended gas unit heater claimed to have completely modern design has been produced at the Reznor Mfg. Co. It has automatic two-speed fan control.

All the controls are now located in one group within the cabinet. Controls are reached for installation and service by removing the access panel located on the side of the cabinet. The fan motor is mounted directly to the sturdy wire fan guard, thereby eliminating the girder-type motor base.

Reznor's "Flexi-Temp" control system is now optional on the 25, 50, 75, and 100,000 B.t.u. suspended models. Use of this control system minimizes temperature fluctuation and closely approaches continuous air circulation. When the fan control is energized by rising temperature in the heat exchanger, the fan comes on at low speed, the company said.



Introduces Power Saw Said To Save Time



—KEY NO. G-9219—

DES PLAINES, Ill.—The Do-ALL Co. announces the introduction of model C-12 power saw.

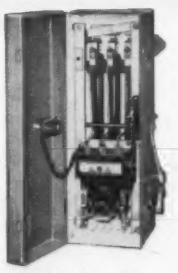
Two basic requirements are that the machine be nearly foolproof so that unskilled workers can operate it; and that setup and operation be very rapid so that the valuable time of skilled workers be conserved and down-time be reduced to a minimum.

Model C-12 has large work capacity. It has a capacity to handle 12-in. rounds, 12 by 12-in. square stock, and work weighing up to 1,500 lbs. Rapid setup and rapid cutting assure that urgently needed parts can be gotten out in a minimum of time. It is common practice in maintenance shops for cutting to be performed by unskilled workers who pay little attention to cutting speeds. Model C-12 provides four speeds by means of step pulleys; so that one may be selected for the principal work performed by a particular shop, the company said.

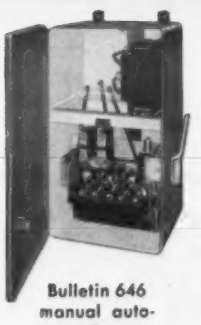
QUALITY MOTOR CONTROLS and ACCESSORIES

Here is a complete line of motor controls for air-conditioning installations. They are fully described, with ratings and dimensions, in the Allen-Bradley Handy Catalog, a 132-page reference book on manual and automatic controls.

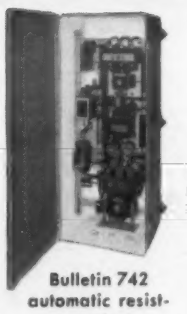
The simple design of Allen-Bradley controls assures freedom from operating troubles that are costly to service. No contact maintenance means long, trouble free operation. Send for catalog.



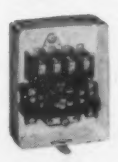
Bulletin 640 manual resistance-type starter



Bulletin 646 manual auto-transformer starter



Bulletin 742 automatic resistance starter



Bulletin 709 across-the-line solenoid starters up to 300 hp, 220 v; 600 hp, 440-550 v.

Bulletin 837 temperature control

Bulletin 836 pressure switch

High and low pressure cutout

The Allen-Bradley line of reduced voltage starters provide velvet smooth acceleration without causing lamp flicker . . . the answer to power companies' starting current limitations.

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MOTOR CONTROL
A-B QUALITY

Aims To Get Freezers Moving Through Dealers

Shows Dealers How To Make Prospects 'Thirsty' for Freezer Living Following Well-Known Specialty Selling Formula

CHICAGO — Discouraged about his past failure to sell home freezers, an appliance dealer truculently defended himself with the old saw:

"You can lead a horse to water, but you can't make him drink!"

Tom Fitzgerald, Amana Refrigeration, Inc.'s Chicago branch manager, politely told him: "It's not your job to make him drink. It's your job to make him thirsty."

Showing dealers and their salesmen how to make the prospect "thirsty" for freezer living is a job Fitzgerald, a specialty salesman from way back, tackles with enthusiasm.

CONDUCTS SERIES OF TRAINING SCHOOLS

Last spring, he conducted a series of training schools for dealer salesmen at which he trained about 100 men. The school went over so well, he is planning to repeat it again this fall.

The ideas taught were not new, Fitzgerald pointed out. They have been used for years in successful freezer selling. And they follow the formula for specialty selling that made washing machines, refrigerators, and vacuum cleaners the household words they are today.

The aim now, Fitzgerald emphasized, is to get freezers moving through appliance dealers. Freezers still do not have the public acceptance needed to move them in large volume at low markups.

'MUST BE SOLD'

They must be sold. The appliance dealer is the logical man to sell them. It has been proved over and over again that dealers can sell freezers if they and their salesmen will use the proved sales techniques, Fitzgerald contends.

The food plan idea is still the most successful way to sell freezers, if the plan is honestly run, Fitzgerald maintains. The continued success of the Amana plan shows that, he said. Most are still operating smoothly today.

When food plans have failed, Fitzgerald said, it has been the fault of other factors rather than the basic idea of the plan itself. They have foundered on such rocks as unsound credit risks, loss of control over the quality of the food sold, mismanagement, and lax salesmanship.

While the appliance dealer need not offer a food plan to sell freezers, he must keep in mind that the food is the most important element in the sale.

In our school, Fitzgerald declared, we emphasized that the salesman cannot sell freezers unless he believes firmly in the advantages of freezer living. We strongly urge that he use one in his own home to get first hand knowledge. Then he can speak from the authority of his own experience. That is always very convincing to the prospect.

'SHOULD SELL NEED'

We stress that the salesman must sell the need and the use of the product before he can go into his product story, Fitzgerald asserted. We followed that same pattern in the school. Each salesman attended three sessions. The first two were on food; the last on the freezer itself.

We showed the men a strip film on the processing of a side of beef, he said. Most had never seen meat processed before. They knew nothing about it. The film was very enlightening to them.

We explained how the freezer owner can save time and money by cutting down on the cost of shopping, by bulk baking, by buying fresh produce at the peak of flavor and preserving that flavor through freezing, by cutting down on food waste, and by buying in larger quantities.

"As the salesman enumerates these various advantages to the housewife, at least one will strike her fancy and cause her to remark, 'I didn't know you could do that with a freezer.' Her imagination kindled, she will think of other ways that the freezer can help her personally. That is the way desire is created."

"WHETS DESIRE, EXPLAINS ADVANTAGES"

Then, when her desire for a freezer is whetted, the salesman can go into the advantages of our particular make of freezer. These advantages were also explained thoroughly to the men.

Fitzgerald reminded the men to keep the emphasis on the food rather than on the freezer. The Amana plan is a combination of food first and then a method of storage. One without the other is of no value.

Frozen Food Promotion Gives Calif. Market Big Volume Week

LOS ANGELES — An outstanding volume week was hit here by Hughes, five-supermarket independent—by staging its first "operation deepfreeze," an all-stores frozen food sales promotion.

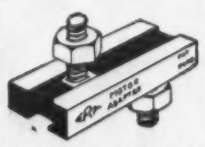
Spearheaded in local newspaper advertising, the company said success of the promotion would probably pave the way for similar events.

Good movement of frozen cakes was reported along with many other frozen items, the supermarket chain noted.

Moves To New Site

RICHMOND, Va. — Hill Refrigeration Corp., formerly at 612 W. Broad St., has moved to a new location at 20th and E. Franklin Sts., the company announced.

MOTOR BASE ADAPTERS
Sell Many Other Items



Keep them in stock. Servicemen will pick up adapters and motors, carry them in their cars, and complete service on the job in one call. Eliminates delay of having motors away for rebuilding. Adapters are easy to install, fit any base. No motor shaft too long or too short. They also bring you more sales in motors, belts, pulleys, controls, etc.

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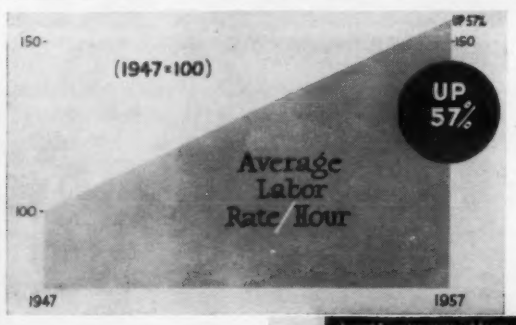
Westinghouse: Purchasing Philosophy; Qualities It Expects In Suppliers

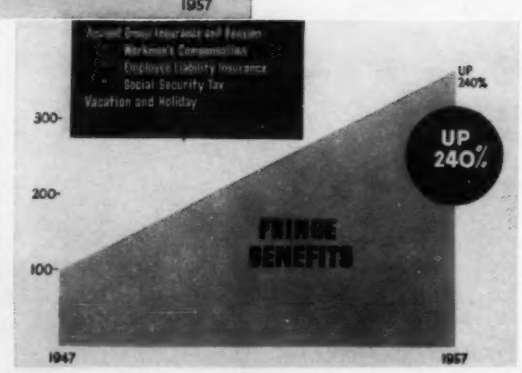
Firm Wants Suppliers To Help Reduce Costs, Up Production Efficiency, Insure Highest Possible Quality In Products

As the industry's manufacturers move into a new model year, the role of the supplier of components and materials becomes intensified. Thus, we think the accompanying report on the qualities expected in a supplier is particularly timely now.

The report came from a somewhat unusual meeting for its suppliers held by the Westinghouse Electric Corp. Major Appliance Div. during a presentation of its 1958 line to distributors at its Columbus, Ohio plant. Westinghouse disclosed some of its philosophy about purchasing, and outlined to its suppliers the qualities it expected in them.



LABOR COST up 57% at Mansfield plant.



FRINGE BENEFITS up 240% in accrued group insurance and pension, workmen's compensation, employe liability insurance, social security tax, and vacation and holiday.

COLUMBUS, Ohio—In an unusual meeting held during the week-long presentation of its 1958 line to distributors and key dealers, the Westinghouse Major Appliance Div. played host to an invited group of more than 158 supplier representatives, who saw the elaborate 3-hour "musical comedy" presentation of the new products, and then listened to Westinghouse executives outline what was wanted and expected of suppliers.

Purpose of this unusual conclave was to impress upon suppliers the necessity for bringing all their resources to bear to assist Westinghouse in its drive to reduce costs, improve manufacturing efficiency, and to insure the highest possible quality in its products.

'Mfr. Caught In Price-Profit Squeeze'

Leading off the group of manufacturing and purchasing executives who addressed the suppliers was John W. Craig, vice president and general manager of the division, who used charts and graphs to point out how the appliance manufacturer has been caught in a price-profit squeeze.

Cost increases in raw materials, as compared with 1947, are in the order of 87% for hot rolled steel, 80% for cold rolled steel, and 31% for aluminum sheet.

Cost of Basic Raw Materials

(Base Price)	1947-1957
Hot rolled steel	Up 87%
Cold rolled steel	Up 80%
Enameling iron	Up 78%
Copper	Up 50%
Aluminum sheet	Up 31%

Hourly labor rates in the Westinghouse Mansfield plant are up 57% from 1947, and the cost of fringe benefits for labor has jumped 240% in the same period, Craig pointed out.

The appliance industry has been particularly hard hit by these increases in costs, Craig pointed out, showing that while the rise in average hourly wages in the appliance industry had paralleled the rise in such wages in the automobile industry, the wholesale price index on appliances had increased hardly at all, while that of automobiles had risen over 30%.

This has resulted in a terrific squeeze on gross margins, Craig said. For example, on refrigerators, the manufacturing cost has gone up 11.4% since 1947, while the selling price has dropped 19.8%.

Craig and the Westinghouse purchasing executives were emphatic in declaring that Westinghouse would spare no effort in getting value for dollars spent in its purchasing, and they pointed out that a "make-or-buy" committee is always functioning.

'Make-or Buy' Committee

This committee functions when the feeling prevails that the purchasing department is paying beyond the nominal profit for a purchase part. The matter is put before the supplier (or suppliers), and if the cost does not get into line. Westinghouse officials study the costs of producing the part (including capital investment and depreciation) and may make the decision to produce it.

A battery of Westinghouse purchasing executives then discussed various phases of a topic which might best be described as "what constitutes a good supplier."

"First of all," said Warren Ullom of the Mansfield plant, "we look to you for leadership in design for cost. You gentlemen are specialists in your respective fields just as we are specialists in the final appliance products.

"Although we continually strive for as good or better a product at the lowest cost, the greatest potential for cost reduction lies with you, the specialists. We want and need your ideas.

"More than that, we want you to aggressively stimulate these ideas within your respective companies. Call in your sales managers. Ask them to make a study of every part you supply us and every one you could supply with a view toward finding a better and less expensive way of building it.

'Evaluate Critically'

"Never, and I repeat, never accept our specifications as final without critically evaluating them for cost. Our engineers cannot be specialists in all types of component parts, and cannot possibly design every part in most economical manner. We urge that you, as specialists, early in the design cycle, question objectionable specifications and determine their necessity.

"We feel that some of you hesitate to question our drawings, thinking that the business will be given to someone else who doesn't question a certain specification. We feel that anything you question can only improve our position.

"The easy way out for many suppliers is to pass along price increases which, over the past few years, have become too frequent. We appreciate, and would like to do more and more business with, the supplier who restudies his items in an attempt to offset the increases.

"We are positive that you, as the top management, could stimulate, within your respective companies, untold reductions merely by delegating a specific person or persons to be responsible for examining each and every Westinghouse part for which you have specifications. Ask for written suggestions for cost reduction on each item. Then come to us with your proposals.

Design for Product Leadership Expected

"Another big item for which we look to you for leadership is in design for product leadership. Most of you are doing business with other appliance manufacturers and have a pretty fair idea of what is needed and wanted throughout the industry. Most of you at one time or another come up with ideas for good commercial features based on your cross-sectional view of the industry. Generally, these ideas must be evaluated and developed by an appliance manufacturer before they take on tangible value.

"Frankly, we want first option on these features. If they can fit into our program, we will be most happy to devote endless effort in working out the mutual problems of application.

"Without question, the most important single factor in the success of such a venture is communication. Good communications means to us an endless flow of information and ideas between your people and ours.

Information Flow

"There are very few, if any, problems that cannot be solved if the right information flows between the right people. This communication does not function most effectively unless the lines of flow are properly set up.

"To stimulate the flow of ideas, suppliers' representatives should have some technical training and yet be commercially minded representatives. As buyers, we interview hundreds of salesmen each week and see

(Continued on next page)

more Superior valves, fittings and accessories are being used in 1957 than ever before you should be using them too...

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moderately priced—ceiling mounted

single or double fans . . . 8 models—265 to 1400 BTU

Check these features . . .

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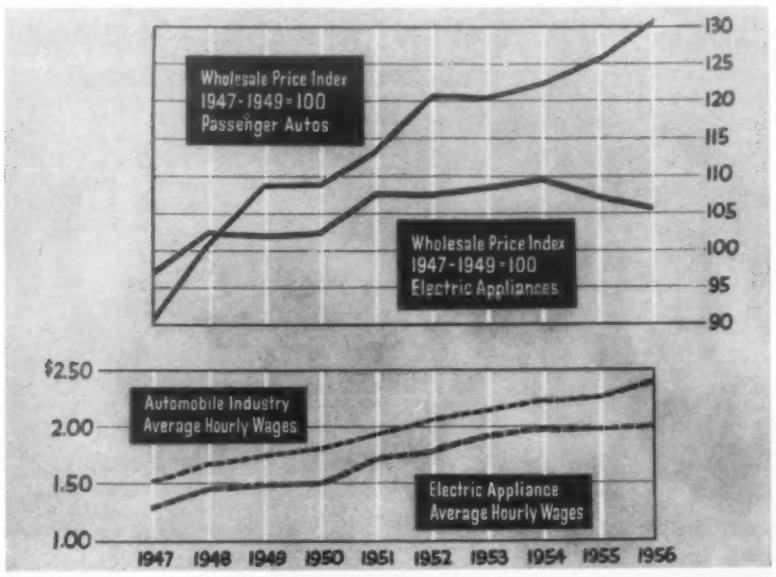
For more information about products advertised on this page use Information Center, page 20.



WHOLESALE price index 1947-49 comparing electric appliances with passenger autos and average hourly wages.

Westinghouse--

(Continued from preceding page)

all types. Surprisingly enough, we find that in too many cases the salesman knows substantially less about his product than the buyer and, in too many other cases, he is unable to grasp the commercial significance of his product versus our requirements. Let's face it, this is money out of your pockets.

'Social Salesman' Out

"The day of the purely 'Social Salesman' is over. There is no place for him anymore. We want representatives that can give us the information we need when we need it. You will find that a man who can do this is a man who picks up extra business by detecting other requirements for his product or other products which your company could produce.

"Men of this caliber are vital to your success and extremely important to us in getting the most for our money. In plain language, we do not need Christmas presents, golf matches, or free lunches. We do need good representation from you."

The theme that suppliers who have all the other desirable characteristics, but who fail to perform — that is — deliver on time, are of little help to the purchasing firm, was expounded by Ira Purdy of the Springfield, Mass. plant.

Results of Failure To Deliver on Time

"Failure to deliver on time hurts not only the buyer, but hurts you as a supplier," Purdy pointed out. "Isn't it a shame that your salesmen and your sales executives spend so much time seeking business and your engineers spend so much time and talent developing good products, and then you fail to deliver? This failure can only lead to reduction in business for your company.

"When a buyer deliberates over the placement of a purchase order, one of the most important things he considers is whether or not he will get the material in time to support production. Of course, any company can deliver if given enough lead time, but this is not a true test of a supplier's ability.

Level of Competition

"The appliance industry of today is faced with an ever-increasing level of competition. This severe competition manifests itself in many ways. One of the more significant ways is in attempts to reduce inventory levels of both finished goods and raw materials or component parts.

"It is also manifest in attempts to shorten the delivery cycle, and to adjust production schedules on extremely short notice.

"For us to remain competitive and forge ahead, we must continue to watch our inventories and to find ways to reduce them further. This is all part of the game. We therefore expect our suppliers to work with us in tackling this seemingly impossible job by finding ways of moving faster and becoming more flexible.

100% Accurate Short Term Information

"We recognize that not all deliveries can be exactly on schedule. We do insist, however, that the percentage of good deliveries should be extremely high. In all cases we must absolutely have good information at the proper time.

CHART shows selling price is down, manufacturing cost up in the last decade.

"This means that you must be able to give us nearly 100% accurate short term information. A buyer's delivery inquiry of a morning should be answered with a delivery promise for that evening and the following day within a close margin of accuracy.

"As stated before, we don't expect you to meet 100% of your delivery promises. In the absence of meeting them, however, we do expect good information, since good information can save a production loss through efficient expediting.

"As soon as a fall-down appears likely or imminent, a timely phone call to the buyer can give him sufficient time to make other arrangements, such as changing schedules, going to another supplier, as we see here, expediting shipment on what has been produced.

"Believe it or not, it can cost Westinghouse as much as $20,000 a day to shut down a certain production line without advance notification. This is

(Concluded on next page)

RUBATEX OVERCOMES MOISTURE PROBLEMS

ALLOWS SIMPLE DESIGN— CUTS PRODUCTION COSTS

Reasons why Gibson Refrigerator Company switched exclusively to Rubatex on 19 separate parts for their room and commercial air conditioning units.

"Gibson window units dehumidify and remove up to 12 gallons of moisture from the air daily. With Rubatex at sealing points—there's no danger of water leaking into room or dripping on side of building. If we used anything else in place of Rubatex, we would need a more elaborate design to handle the problem of moisture control."

James M. Sweedyk
Chief Air Conditioning Engineer
Gibson Refrigerator Company
Greenville, Michigan

Gibson was faced with a problem of finding a product that would provide an air seal which would prevent sweating and accumulation of moisture, plus a material to act as a sound deadener as well.

After exhaustive laboratory tests, rubber and other materials, which soaked up water and started dripping when the saturation point was reached, were ruled out. Rubatex Closed Cellular Rubber met test operations on every count and was specified for 19 Gibson air conditioning unit parts.

Five years of exclusive use of Rubatex still convinces Gibson engineers that Rubatex offers them the most effective sealing material they can buy—efficient moisture control, excellent sound deadening qualities, plus considerable savings in simple design and quick, easy production methods.

If you have a moisture control problem, it will pay you to check the advantages of Rubatex first.

Earl Palmer, Manager of Gibson's Heating and Central Air Conditioning, points to the Rubatex strips used to seal door on their commercial central air conditioning unit. He says, "Rubatex with its closed cellular structure repels water indefinitely. Water cannot penetrate even at cut edges. And that's important toward long lasting efficiency of our air conditioning units."

Rubatex G-200-C and G-208-C stocks are easily installed by assembly-line worker. An adhesive is applied to the metal, atop which approximately ½" wide strips of Rubatex are easily put into place.

RUBATEX
CLOSED CELLULAR RUBBER
SEALING STRIPS

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RUBATEX DIVISION, Dept. A-2
GREAT AMERICAN INDUSTRIES, INC.
Bedford, Virginia

PIONEER MANUFACTURER OF CLOSED CELLULAR RUBBER

For full details and sample of the new Rubatex Closed Cellular Rubber Sealing Strip—print your name in space below, attach to your company letterhead and mail to us.

Name _____

Qualities Westinghouse Expects--

(Concluded from preceding page)

$20,000 down the drain with absolutely no return.

"When there is inadequate material to support production even when delivered on time, we can if given sufficient notice, obtain the same or substitute materials from other suppliers in time to support production.

"Of course, none of you likes to see us go to your competitors for material; however, I am sure none of you likes to see Westinghouse lose $20,000 a day, because of your inability."

Importance of quality in purchased parts was outlined by Arnold Sheppman of the purchasing department at Columbus to the assembled suppliers.

'Must Be Satisfied'

"We sell one or two appliances to each customer at a time," explained Sheppman, "and in order to keep him coming back for more, he must be completely satisfied with each and every item purchased. If that happens we can hope to sell that customer the appliances he will need in the future. On the other hand, if one item causes dissatisfaction we run the risk of losing all future sales.

"In other words, if a customer becomes dissatisfied with Westinghouse because of poor performance of a steam iron, for example, it will be a difficult job for our sales organization to sell that same customer a Laundromat some future time. If you are a supplier to us of Laundromat parts, in essence your business has been hurt.

"What is quality? Quality is compliance with specifications and standards, no more and no less. Functionally a part must be dimensionally correct and within the tolerances stated on the drawing while the material must have the required physical and chemical properties.

"It must be recognized, however, that we cannot always spell out exactly on our drawings the exact level of quality needed. You are all familiar with cast or moulded parts where dimensions are changed to correspond with those actually produced by the dies or molds as built by the toolmaker.

Welcome Consultation

"The point is that some dimensions are critical and some are not. For that reason, we welcome with open arms the supplier who after being awarded an order consults with us before starting to design the tooling involved in order to determine exactly what is needed and where.

"In the same way a supplier can gain an advantage if in quoting on a job he calls our attention to quality requirements which greatly increase cost. If our specifications or tolerances are such that the cost of inspection or scrap loss is a major factor of cost, please tell the buyer we realize there must be a balance point between the cost of producing a product and the cost of its inspection.

"However, it must be clearly understood that unless you take exception to our inquiry, we expect parts to print.

"In too many cases the supplier goes to great lengths to produce quality parts and then ships them in packages or containers totally inadequate to protect against normal transportation risks. Even if the parts arrive in good condition, the container is too weak for handling or storage.

Packaging

"No method of packaging is satisfactory unless the product at its point of ultimate use is as good as when it was manufactured in the supplier's plant. Ask the buyer about the application of your product and if possible watch the handling and assembly in our plant. It may give you an idea of a better way to produce or package your product.

"Another important requirement is proper identification on the part where required as well as the style or part number on the container along with your packaging slip showing required information. We spend a lot of time and effort doing these operations which are your responsibility.

"A great deal of thought has been given as to how to measure quality in terms of performance by an individual supplier. Quality is one of the yardsticks by which we determine whether he should be rewarded for a good job and penalized for a poor one in terms of future business.

"The old approach was to establish a ratio between the number of shipments received and the number of shipments rejected. This method, however, did not take into account the size of each shipment or the effect of the assembly line rejects.

Different Approach

"Recently we started a different approach on quality improvement by talking a language you of management understand, that is, dollars. The object of this analysis is not merely to determine whether shipments are accepted under protest or returned—but to encourage better quality control in suppliers' plans.

"Our surveys indicated our inspection people wrote 427 rejection notices involving 99 suppliers in a two-month period, averaging $80,000 per month. Approximately two-thirds of these rejection notices covered material rejected as received, as compared to one-third rejected on the assembly line.

"Two-thirds of our line rejects were returned to the supplier and one-third accepted after detailing. On the other hand we were able to detail and ultimately accept approximately four-fifths of all material rejected as received and one-fifth was returned to the supplier.

"Our analysis also indicates that 28% of the suppliers furnishing defective material accounted for 85% of the total dollar value or rejected material. Your objective is not to be included in the 28%.

'Reviewed Rejections'

"We started at the top of the list in sequence of dollar value and reviewed the circumstances of rejections and naturally found we also make mistakes, where we fail to notify our Inspection Department of effective points of engineering changes or where substitute materials and deviations to print are agreed to.

"This year in starting our 1958 models we introduced a new procedure where in effect we ask the supplier to tell us of dimensions or specifications where he has found a deviation. Reason for this is that we do not want to take up the time of our Inspection Department to find such discrepancies.

"Such deviations as may be found are brought to the attention of the buyer by a special form which the buyer refers to our Engineering Department. If the deviation is acceptable the report and sample is sent to our Inspection Department for a complete check. If the deviation is not acceptable, we advise the supplier to correct.

"It is disappointing to find that some suppliers point out only one or two deviations which we may accept, and then after our own inspection we find additional deviations. This defeats the whole purpose of the new procedure which is designed to save time for both of us approving samples of new parts.

"These reports also tell us the degree of quality control in your plant. We are beginning to doubt if some of you have the personnel and facilities to do the job we expect."

April-May, 1957—$160,000 Worth of Material Rejected

STEEL needed to make an 11-cu. ft. refrigerator in a comparison of cost between 1947 and 1957

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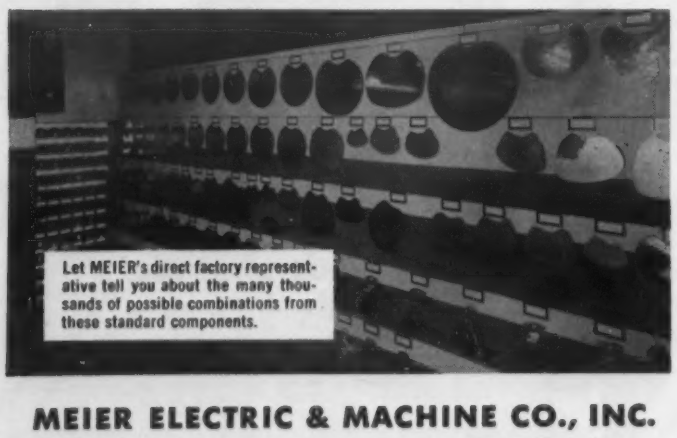
Let MEIER Props Help YOU keep mounting Production Costs in Line

If you manufacture products involving air movement, chances are MEIER can help cut *your* increasing production costs.

After all, we've been in the fan blade business a long, long time. And, down through the years, we've accumulated quite a collection of standard parts which offer thousands and thousands of combinations which may be applicable to your needs. And, at less cost to you!

You simply ask for a blade to do a job, and we'll take it from there.

Meier Electric & Machine Company, Inc. offers you over 50 years of experience, plus the scientific and technical know-how and equipment necessary to provide you with the correct propeller for *your* product. With this background of experience—coupled with continuous scientific research, modern production and technical facilities—we're in a wonderful position to serve both large and small manufacturers of products involving air movement. Try MEIER.


Let MEIER's direct factory representative tell you about the many thousands of possible combinations from these standard components.

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NEW FIXTURES, REFRIGERATORS AND STORE AND OFFICE EQUIPMENT

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GET THE FACTS WRITE . . .

North American VAN LINES, INC.

CRESTON DIVISION
Dept. R
Fort Wayne, Indiana

Gentlemen: Please rush
FACTS & CASE HISTORIES ABOUT UNCRATED SHIPPING.
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ADDRESS _____
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For more information about products advertised on this page use Information Center, page 20.

Westinghouse Service Div. Names Managers

MANSFIELD, Ohio — W. B. Creech, manager of the Westinghouse Electric Corp.'s service division, announced four appointments within the newly-formed division.

R. H. Gordon will be service manager of major appliances; S. A. Voelker, service manager of refrigeration specialties; L. J. Weaver, manager of the renewal parts department; and J. A. Brown, manager of field service.

The new assignments follow the elevation of the service department to divisional status. In making the appointments, Creech said, "Because of the wide assortment of products and complexity of resulting service problems, the basic structure of our service organization is being changed to substantially strengthen Westinghouse overall approach to consumer service."

For the past eight years, Gordon has been assistant general service manager of the Electric Appliance Divs. He will continue to make his headquarters in Mansfield and will have full responsibility for all phases of headquarters administration of service on all major appliance division products. Also, temporarily, he will serve as acting service manager of portable appliances, covering all products of the portable appliance division.

Voelker will make his headquarters at the Westinghouse plant in East Springfield, Mass. He will be responsible for all phases of service activities on products of the refrigeration specialties division and in addition will have coordinating responsibility for service on motored appliances of the portable appliance division produced in the East Springfield factory.

Since 1951, Voelker has been assistant to the general service manager with responsibility for the whole range of East Springfield products.

Weaver, since 1951, has been manager of the renewal parts certer at Newark, Ohio. As manager of the newly-formed renewal parts department, he will have responsibility for all phases of renewal parts operations, including parts data, cataloging, scheduling, parts availability, inventory control, warehousing, and shipping. He also will have full administrative responsibility for the renewal parts center.

Brown also head a new department as manager of field service. He will implement and execute all factory service policies through the Factory Field Service organization and through all Westinghouse distributors and authorized service stations. Appliance division regional service managers and members of their field organization will report to Brown, it was explained.

Brown came to the Electric Appliance Divs. earlier this year from headquarters of Westinghouse Electric Supply Co., where for seven years, he had been national general service manager.

Flexonics Plans West Coast Plant

MAYWOOD, Ill. — Flexonics Corp. here will build a new plant on a 10-acre site at Santa Ana, Calif., it was announced by John F. P. Farrar, president.

Construction is expected to begin shortly on an initial building of 25,000 sq. ft. The plant will house special production for aircraft, rocket, and missile industries besides assembly of industrial products and stocking of Flexonics' full product line for West Coast markets.

Flexonics' western regional office will move to the Santa Ana plant as soon as the facility is completed.

Heading up the new Santa Ana Div. is Kenneth Kampenga as factory manager. George W. Derum was recently appointed western regional sales manager.

Flexonics makes many industrial products which include flexible metal hose, expansion joints, metal bellows, auto thermostats, and synthetic and plastic industrial hose products, it was explained.

Controls Corp. of America Ups Dividend

SCHILLER PARK, Ill. — Directors of Controls Co. of America have increased the regular quarterly dividend from 18¾ cents to 20 cents a share on the company's capital stock, payable Oct. 1, 1957 to stockholders of record at the close of business Sept. 13, 1957.

This board action places the capital stock on an annual rate of 80 cents per share. This quarterly declaration is the fifth one since last year's merger.

G-E Claims Halogen Leak Detector Can Spot Carbon-Tet In Human System

WEST LYNN, Mass.—Medical detection of carbon-tetrachloride poisoning — potentially four times as dangerous as carbon-monoxide—may be greatly improved through tests conducted by a General Electric engineering medical-team.

Carbon-tetrachloride is a chemical used in many consumer cleaning products and in various industrial solvents. Poisoning can result simply from breathing carbon-tetrachloride vapors.

Preliminary investigations by the company's Instrument Dept. engineers and Dr. J. W. Blevins, plant physician, show that the General Electric Halogen leak detector will detect carbon-tetrachloride in the human system more than an hour after exposure to relatively small amounts of "carbon-tet" vapors.

Dr. Blevins said other instruments have been used for this purpose, but "the increased sensitivity and accuracy of the H-1 detector greatly improves medical tests for detecting carbon-tetrachloride poisoning."

General Electric's detector obtains a quantitative measurement of the gas present as well as a qualitative detection.

Airco Forms New Div.

NEW ORLEANS—Airco Refrigeration Service, Inc., 3025 Jackson, has announced a new division devoted to residential air conditioning, sales, service, and engineering, the company announced.

Mr. Mulligan simplifies his bookkeeping
I CAN'T SEEM TO FIND THAT BILL FROM XYZ VALVE CO.
THERE ARE JUST TOO MANY MANUFACTURER'S INVOICES TO KEEP TRACK OF
LEDGER
ACCT. BOOK
ACCOUNTS
ETC.
ETC.
HERE IT IS! MAKE THEM OUT A CHECK FOR $1.03
OH! I'VE RUN OUT OF BLANK CHECKS
CHECKS
WHAT A MESS! WHERE ARE OUR ORDER RECORDS?
MULLIGAN REFRIGERATING CO.
P. MULLIGAN pres.
FOR WHICH COMPANY?...THERE ARE 47 OF THEM
GUESS I'LL HAVE TO GIVE UP GOLF AND WORK SATURDAYS TO CLEAR THIS UP
IT MIGHT TAKE SUNDAYS, TOO. WHY DON'T YOU JUST LIVE HERE?
SAY! LOOK AT THIS!
Buy from your complete air conditioning and refrigeration wholesaler —a means to simplify paper work in ordering billing and returning defective materials
ABC REFRIGERATION SUPPLY CO.? SEND YOUR CATALOGUE. WE'RE SOLD ON YOUR ONE-SOURCE SUPPLY SYSTEM
CALL JOE AND TELL HIM I'LL BE PLAYING GOLF SATURDAY AFTER ALL
COMPLETE AIR CONDITIONING & REFRIGERATION WHOLESALER
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For more information about products advertised on this page use Information Center, page 20.

Economical Heat Pump Seen Likely With Increased Electrical Efficiency

NEW ORLEANS — Increased electrical efficiency in the design of air conditioning equipment has opened the way for an economical reverse cycle heat pump, believes Salvotore Giordano, president of Fedders-Quigan Corp.

It is the high B.t.u. per watt ratio of Fedders new 1-hp., 115-volt, 7½-amp. air conditioner that has paved the way for future advances and improvements in the heat pump field, he told the Electrical Association of New Orleans recently.

Speaking at a dinner sponsored by Interstate Electric Co., Fedders distributor here, Giordano asserted that a whole segment of Fedders research department is working full time on the heat pump.

"At the moment, we are exploring the utilization of the heat pump in a large apartment house in Chicago, which is to be erected in the fall,"he said. "The only supplemental heating will be the resistance heater incorporated within the unit, and then it will only operate at lower temperatures."

He said he believed that the future of air conditioning lies in cooling plus heating. He thought the time not far off when the consumer will find no need for two separate systems for cooling and heating.

"We have in the interim," he continued, "marketed room units with heat pumps in limited areas. But . . . less than 1% of all room units sold last year had heat pumps. Just as room air conditioners popularized air conditioning, it can similarly benefit the heat pump," he declared.

He told the utility men Fedders' 1-hp., 7½-amp. unit has a power factor of 98 to 99.3% over it's operating range. Its starting current is only 37amps. It meets the requirements of the National Electrical Code in that it does not exceed 50% of the rating of a branch circuit when lighting units or other appliances are also applied. It has a greater cooling capacity than the 1-hp. 12-amp. units, he claimed.

Giordano urged utilities to "recognize the long ranges advances inherent in the realization of the heat pump potential". He asked that they take measures to advance its cause.

"The seeds of time and effort planted now will flower into the economic advantages of the future," he said.

Reprints Available

Hermetic Compressor Design, Development, by Henri Soumerai. Only 40¢ each.

Mail this ad with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

MECHANICAL BULLETIN ME-13

Text of Recent FHA Bulletin Relaxing Some Requirements For Air Conditioning In FHA-Insured Homes

Printed here is the complete text of the Federal Housing Administration's recently issued Mechanical Engineering Bulletin ME-13 that relaxes some of the requirements for air conditioning in FHA-insured homes.

To help you see clearly what is new and what has been changed from Bulletin ME-12, which ME-13 supersedes, we have

1. Put all new or revised material (except section headings) in **boldface type like this.**

2. Put all material that appeared in ME-12 but does not appear in the new ME-13 (in parentheses like this). Thus the requirements inside the parentheses are no longer in effect.

ARCHITECTURAL STANDARDS DIV.
FEDERAL HOUSING ADMINISTRATION
WASHINGTON 25, D. C.

MECHANICAL ENGINEERING BULLETIN NO. ME-13
Aug. 12, 1957
SUPERSEDES
BULLETIN NO. ME-12
Dated June 24, 1954

SUMMER AIR CONDITIONING REQUIREMENTS
WARNING

The technical description, requirements and limitations expressed herein do not constitute an endorsement, approval **or acceptance** by the Federal Housing Administration of the subject matter, and any statement or representation, however made, indicating approval or endorsement by the Federal Housing Administration of the subject matter, and any statment or representation however made, indicating approval or endorsement by the Federal Housing Administration is unauthorized and false, and will be considered a violation of the United States Criminal Code 18, U.S.C. 709.

Subject to good workmanship of installation and the conditions of acceptance listed herein, the equipment described in this bulletin may be considered acceptable in the construction of properties otherwise eligible for mortgage insurance under the Minimum Property Requirements of this Administration.

This acceptance applies only to installations herein described and is not to be construed as indicating acceptance of the property as a whole. Many other factors must be considered under the FHA mortgage insurance underwriting procedures. In order to qualify as security for an insured mortgage, each property will be individually judged on its own merits.

This bulletin shall remain in force until it is superseded by a revised or new bulletin, or withdrawn. The Architectural Standards Division, Washington, D. C., may undertake review of such bulletins whenever conditions warrant. A revised or new bulletin may be issued on the basis of such reviews, depending upon satisfactory experience with installations in actual use and upon acceptance of any proposed changes.

The minimum requirements contained herein are hereby a part of the Minimum Construction Requirements of all FHA insuring offices.

1. OBJECTIVE

To provide summer air conditioning facilities which are safe, quiet and economical in operation and maintenance for the purpose of controlling temperature, humidity, cleanliness and distribution of air within the conditioned spaces.

(ME-12 read: The objective of requirements relating to summer air conditioning is to provide comfort in warm seasons by means of facilities which are safe, quiet, economical in operation and maintenance, and which will provide temperature and relative humidity conditions within the Summer Comfort Zone as defined and illustrated in the ASHVE Guide (latest edition) in the specified living spaces when the outside dry and wet-bulb temperatures are at design conditions.)

2. GENERAL (ACCEPTABLE INSTALLATIONS)

a. These standards apply to all equipment and appurtenances installed to provide air conditioning for summer comfort. Equipment and appurtenances shall be new.

(ME-12 read: Equipment and appurtenances shall be designed for, and installed as, a permanent part of the structure and shall include, in general, a distribution system serving, as a minimum, the living room and any adjacent spaces not separated by doors, and at least one bedroom. The system shall be so arranged that sufficient cooling capacity can be directed to the bedroom to produce specified conditions in that space.

(Unit conditioners designed for installation in walls are considered acceptable; however, units mounted in windows or free standing units not having an extension or duct through an exterior wall are not regarded as a permanent part of the structure.)

b. These standards are not intended to cover evaporative or desert-type cooling systems. Such systems may be accepted by local insuring offices where suitable conditions prevail.

c. Cooling system — On separate drawing or as part of heating plan, floor or basement plan: [Exhibits to be submitted to FHA]

(1) Layout of system showing location and size of ducts, piping, registers, compressor, coils, etc.

(2) Heat gain calculations including estimated heat gain for each space conditioned.

(3) The model number and B.t.u.h. capacity of equipment or units at Standard rating conditions as determined in accordance with the applicable ARI standard.

(4) The B.t.u.h. capacity and the total KW input at stated local design conditions.

Data to be submitted under ME-12.

(A. Building construction details pertinent to heat gain calculations and

(Concluded on next page)

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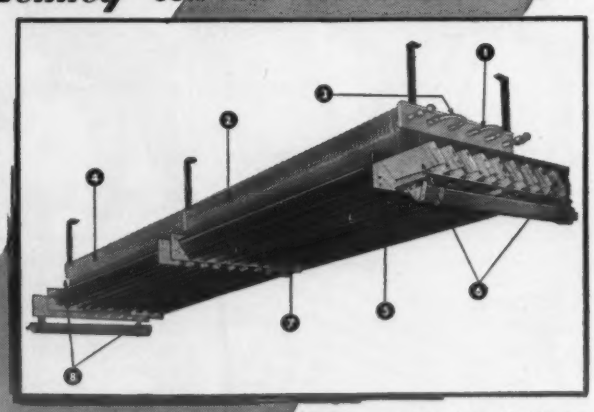
Tenney COIL AND PAN COMBINATIONS

For it takes a combination—a well integrated team of sound engineering and quality craftsmanship — to produce the most efficient and durable Coil and Pan Combinations. That's why, for either standard or special installations, it pays to "take it to TENNEY."



1. Copper-welded connections 2. Super-sensitive fins 3. Electro-tin-plated tubing 4. Mechanically molded bond of facetized fin to tube 5. Louvers of heavy aluminum alloy 6. Scientifically placed louvers for improved air circulation 7. Louvers temperature-equalized to prevent dripping 8. Adjustable pull hook hanger for easy installation and cleaning

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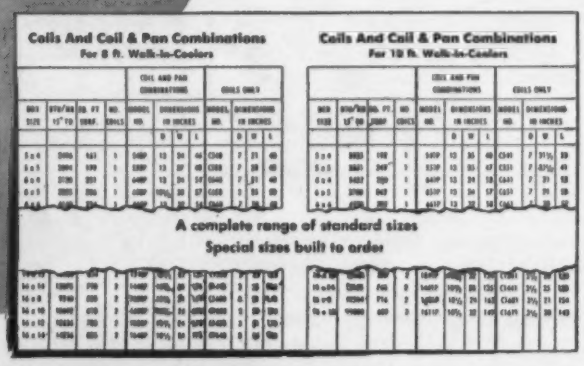
Tenney brings you the advantages of advanced engineering and manufacturing facilities to handle any and every refrigeration problem, for the Tenney line is *built to suit your needs*. Outline your problem, and let us prove that a Tenney unit will solve it. Tenney Engineering, Inc., Dept. F.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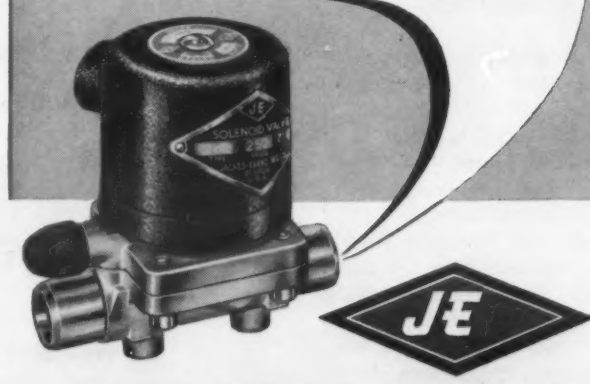

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Simplify Valve Selection
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Mechanical Bulletin ME-13--

(Concluded from preceding page)

complete plans and specifications of the proposed system.

(B. Heat gain calculations including estimated heat gain and B.t.u. extraction for each space to be conditioned.

(C. Cost of installed system and estimates of annual operating and maintenance costs. Where summer air conditioning systems are combined with winter air conditioning or heating systems, the above costs should reflect only the additional amounts for the summer air conditioning system.)

3. CAPACITY OF EQUIPMENT

a. Capacity of equipment shall not be less than the calculated total heat gain and shall be sufficient to maintain inside design conditions within the space to be cooled when the outside dry and wet bulb temperatures are at design level.

(ME-12 read: Capacity of equipment, as a minimum, shall be sufficient to produce the specified inside design conditions within the living room and any adjacent spaces not separated by doors, when the outside dry and wet bulb temperatures are at design level.)

4. HEAT GAIN CALCULATIONS

a. Calculations shall be made in accordance with the American Society of Heating and Air Conditioning Engineers Guide, Air Conditioning and Refrigeration Institute Standards, the applicable manuals of the National Warm Air Heating and Air Conditioning Association, or other recognized and acceptable methods.

b. Outside and inside design conditions shall be specified. Outside conditions shall be (prescribe) the dry bulb and wet bulb temperature as listed in the ASHAE Guide (under) "Design Dry Bulb and Wet Bulb Temperatures in Common Use" (for the city station). For localities not listed in the Guide, the outside design temperatures shall be those established by **the FHA field office.** Inside design conditions **for calculation of the cooling load shall not be higher than 80° F. dry bulb temperature and 50% relative humidity.** (Inside design conditions in excess of 80° F. dry bulb and 50% relative humidity are not recommended for most geographical areas.)

5. REFRIGERATION SYSTEM

a. Refrigeration systems and components shall comply with the requirements of the American Standard Safety Code for Mechanical Refrigeration ASA B9.1 (latest edition) and the current applicable standard of the Air-Conditioning and Refrigeration Institute. Refrigerants used shall be nontoxic and incombustible and shall be approved as a Group 1 refrigerant as classed in ASA B9.1 Code, except that sealed absorption systems may use Group 2 refrigerants when in compliance with this Code.

b. Piping used for conveying condenser cooling water shall be **zinc coated,** (galvanized) copper, or other corrosion-resistant material acceptable **to the FHA field office** (the chief underwriter.) Where condencer cooling water causes excessive corrosion, scaling, or obstruction within the piping or equipment, suitable water-treatment means may be required.

c. Cooling coils, except in units specifically **tested** (approved) and listed by U.L. or A.G.A. for location of coil upstream from furnace heat transfer surface, shall be located so that conditioned air leaving the coil will not pass over the heat transfer surface of any furnace. The cooling coil may be located downstream from the furnace, or the furnace may be completely bypassed during the cooling cycle.

d. All exposed refrigeration piping located less than 6 feet above any floor or outside grade shall be suitably protected to prevent damage to piping or injury to persons.

e. Clearance shall be provided for all construction to permit proper operation, adjustment, replacement and repair of equipment.

f. Suitable means shall be provided for the **collection and** disposal of condensate from the equipment. The condensate drain shall be at least ¾ inch nominal pipe size and shall be copper, galvanized steel, or other corrosion-resistant material.

g. Where the cooling coil or air conditioning unit is located above a living space, or where structural damage may result from condensate overflow, an additional watertight pan of corrosion-resistant metal shall be installed beneath the cooling coil or unit to catch overflow condensate due to a clogged drain, **or one pan with standing overflow and separate drain may be provided in lieu of the second drain pan.** The additional pan, **or the standing overflow,** shall be provided with a drain pipe, minimum ¾ in. nominal pipe size, discharging at a point which can be readily observed. Condensate drains shall not be directly connected to a plumbing drainage system.

6. DISTRIBUTION SYSTEM

a. Duct system shall be designed and installed in accordance with a recognized and acceptable method such as contained in the ASHAE Guide or applicable manuals of the NWAHACA **and shall comply with the National Fire Protection Association Pamphlet No. 90-B,** except as otherwise provided herein.

b. Return air from any living unit shall not be recirculated and delivered to any other living unit.

c. Balancing devices for volume adjustment shall be provided in each supply duct or supply outlet. In combined systems where the same ducts are used for heating and cooling:

(1) Supply outlets shall be provided with suitable directional vanes, and where necessary to achieve proper distribution vanes shall be adjustable, and

(2) Supply outlets in bedrooms shall be provided with shutoff dampers (a shutoff damper).

d. Return air inlets shall be of sufficient numbers and so located that return air from any room will not pass across the normally occupied areas of another room in such manner as to cause objectionable draft. **The CFM capacity of return air inlets and ducts shall be not less than the design CFM capacity of the supply system.** Grilles for return air shall be sized so that the velocity of air through free areas will not exceed 500 f.p.m.

e. Supply ducts and supply piping in crawl spaces, unfinished attics, other non-conditioned spaces, **and in furred-in spaces adjoining non-conditioned spaces,** and, where necessary, other ducts (piping and parts of the distribution system, shall be suitably insulated and covered with a sealed joint vapor barrier **on the outside of the insulation. The type and thermal value of the insulating materials used shall be commensurate with the conditions of exposure and the local design temperature differences.**

(Supply ducts and supply piping in crawl spaces, unfinished attics, and other non-conditioned spaces shall be suitably insulated. Where necessary, ducts, piping, and other parts of the distribution system shall be insulated and covered with a sealed joint vapor barrier to prevent condensation.)

f. Distribution systems employing liquid media for cooling shall be designed in accordance with the applicable criteria contained in the ASHAE Guide and shall be capable of producing summer comfort conditions within the concept of this **standard** (bulletin).

g. An acceptable **water vapor barrier** ground cover **material** shall be provided in the crawl space(s) of any structure in which **summer** air conditioning is installed.

h. Filters shall be sized to provide not less than 1 sq. ft. of total face area per 300 CFM of air and shall be readily accessible for cleaning or replacement.

7. NOISE ABATEMENT

a. Suitable and durable means shall be provided to prevent transmission of objectionable noise or vibration generated by the equipment.

b. As a partial index and guide, the sound level due to operation of the equipment, as measured on the 40 decibel weighted network in the center of conditioned spaces (and) three feet above the floor should **not** be higher (should generally be no higher) than 45 decibels for a normally furnished room or 50 decibels for an unfurnished room.

8. ELECTRICAL

a. All electrical wiring shall comply with the National Electrical Code.

b. All motors shall be protected in accordance with (recommendations contained in) the Underwriters' Laboratories, Inc., Standards for Air Conditioning Equipment, Subject **303, latest edition** (Subject 207(a), latest revision).

c. Manufacturer's wiring diagram shall be furnished for packaged units. Where field built-up or assembled units are installed, a complete wiring diagram shall be submitted.

(Compressors shall be installed on 208, 220, or 230-volt circuits unless specifically exempted by the Chief Underwriter.)

9. GUARANTEE

a. A performance guarantee, including evidence of adequate service facilities, (acceptable to the Chief Underwriter and) executed by the contractor installing the equipment shall be **submitted when required by the FHA field offices** (shall be a part of the contract specifications).

b. Standard manufacturer's warranty shall be required for all equipment. The contractor shall without (additional) charge furnish and install **and provide service** during the first year after (date of) installation. (Equipment carrying a manufacturer's warranty in excess of one year shall be plainly denoted in the submission).

(10. INSTRUCTIONS

(Operating and maintenance instructions shall be provided for each installation and shall be attached to applicable equipment or adjacent thereto at time of final inspection.)

(Signed)
Charles E. Sigety
Deputy Commissioner.

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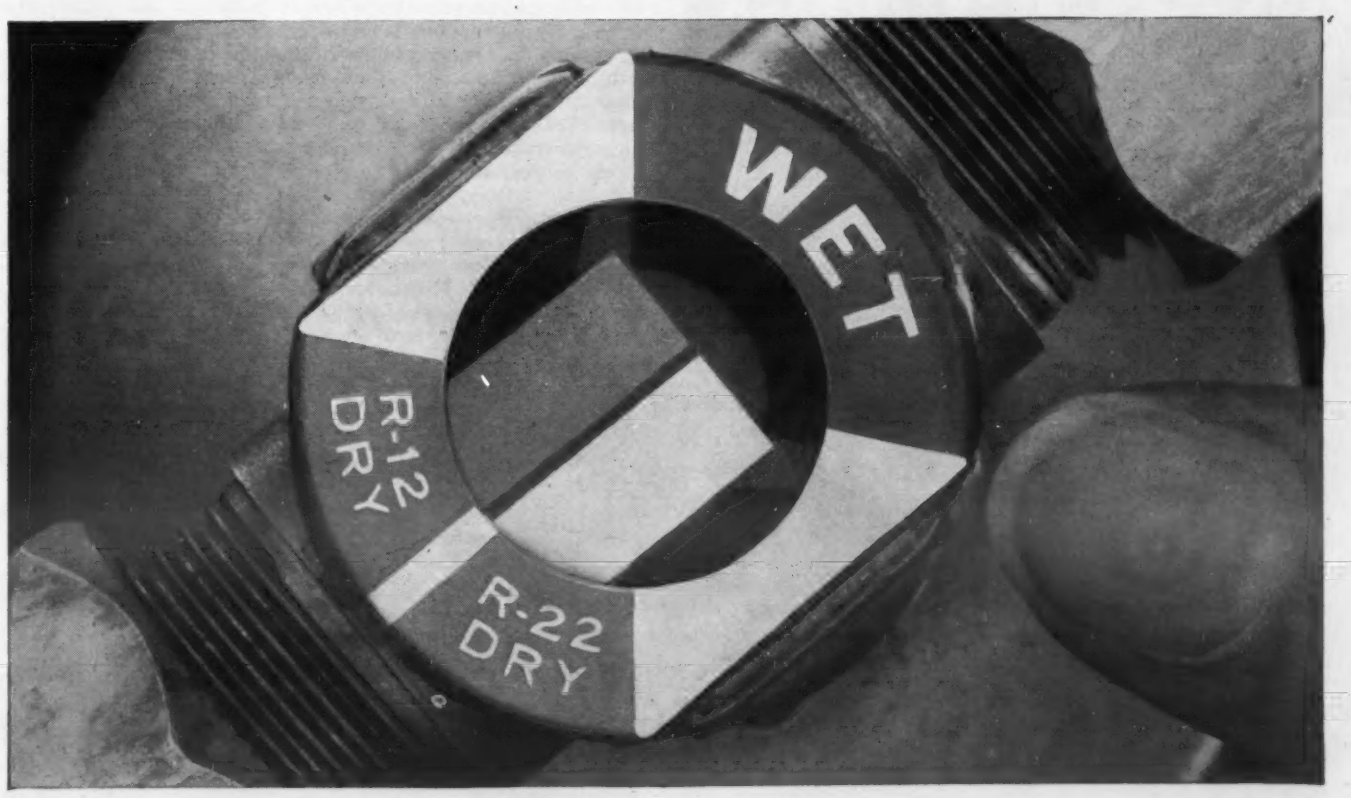
The world's first moisture indicator with a built-in sight glass. The new ANSUL SUPER DRY-EYE tells you at a glance if the refrigerant is dry or dangerously wet, and lets you see the condition of the refrigerant. Here are the four big servicing questions the super DRY-EYE answers for you scientifically!



Q. If I am using Freon-12 how will I know if it is dangerously wet or dry?

A. Just look through the big window at the R-12 indicating element. If it is blue the refrigerant is safe; less than 10 parts per million of moisture present. If it is pink, moisture has climbed above 30 ppm—time to change driers.

Q. If I use Freon-22 in a system how will I know if it is wet or dry?

A. If the R-22 element is green your refrigerant is in safe operating condition—less than 20 ppm of moisture. If the element shows pink, moisture has reached the 25 ppm level; time to change driers and avert a costly breakdown.

Q. Will the Super Dry-Eye tell me if there is a low refrigerant charge?

A. Yes. The fused glass window, the first proven *leak-proof sight glass* in the industry, permits visual inspection of the refrigerant at all times. Bubbles indicate a low refrigerant charge or a possible restriction in the line.

Q. Is there a simple, economical way of correcting the problems which the Super Dry-Eye tells me about?

A. The T-fitting which houses the Super Dry-Eye can also serve as a connection for an Ansul T-Flo drier without an additional break in the line. The drier screws in like a light bulb and hand tightening gives a leak-proof seal.

The Ansul Chemical Company, Marinette, Wisconsin

ANSUL

Refrigeration Problems
And Their Solution
(*As Written by Paul Reed*)

The late Paul Reed, one of the refrigeration industry's most respected writers and teachers, wrote a column on "Refrigeration Problems and Their Solution" which was published regularly in AIR CONDITIONING & REFRIGERATION NEWS for more than 15 years.

Readers throughout the years have hailed this written material as some of the most practical and helpful that has ever been published. Fortunately, the author had an opportunity to revise some of this material and the NEWS is currently re-publishing it.

Checking Refrigerant Charge (2)

AEV SYSTEM

Let us assume that we have a refrigerating system that is short of refrigerant, and first let us consider what the effects or symptoms will be if it is a system using an automatic expansion valve to feed refrigerant to the evaporator, and that compressor operation is controlled by a temperature control:

VAPOR IN LIQUID LINE

If there is insufficient refrigerant in the system, there will be no reserve of liquid refrigerant in the receiver; in fact, there will not be enough for the receiver to keep feeding liquid into the liquid line, and some of the hot gas from the condenser will go directly into the liquid line. The liquid line will be warmer than normal due to the hot gas being in it; also bubbles will show in the sight glass, even if the sight glass is placed just at the outlet of the receiver.

The automatic expansion valve is a constant pressure valve, so it will try to maintain an evaporator pressure for which the automatic expansion valve has been set. But it is not getting a column of solid liquid from the liquid line; there is some liquid, but a lot of the refrigerant passing through the AEV is gas.

So regardless of how wide the expansion valve opens in its attempt to keep the evaporator pressure up, it cannot get or pass enough refrigerant to the evaporator.

EVAPORATOR NOT FULLY ACTIVE

Since the evaporator cannot get enough liquid refrigerant, or putting it another way, since there is not enough liquid refrigerant boiling in the evaporator and changing to a vapor, only the first part of the evaporator is active, that is, only the first one half, two thirds, three fourths, or other portion of the evaporator is really being refrigerated by boiling refrigerant. The remainder is being cooled somewhat, but only by conduction from the colder part and by the cold gas without liquid (superheated gas), passing through it.

Thus, the evaporator is only partly active; therefore, the active or cold part of the evaporator is not big enough to cool the refrigerator, so the refrigerator temperature goes up.

The temperature control bulb is usually attached to the evaporator, and the control switch is therefore actuated by the temperature of the evaporator.

If the system is only a little short of refrigerant, the temperature of that part of the evaporator to which the control bulb is attached, may be cold enough to cause the control to cut off, although the machine may have to run longer than usual in order to get the evaporator cold enough that the control will cut off.

As the leak causes more of the charge to be lost, less and less of the evaporator will be active, until so little of it will be active that it will not be cold enough to cause the temperature control to open, so the machine will then run continuously.

SUCTION PRESSURE NORMAL

The automatic expansion valve, since it is a constant pressure valve, will attempt to hold evaporator pressure up to its setting as long as it is possible for it to do so. Therefore, even though the system may be low on charge, the suction pressure will be normal, until the system has lost so much refrigerant that the automatic expansion valve just cannot maintain the required evaporator pressure, so suction pressure must then be below normal.

How about discharge pressure? It will tend to be lower than normal. At first, when the system is just barely short of charge, the discharge pressure will be about normal. But as the leak loses more refrigerant, it becomes increasingly difficult for the compressor to hold the head pressure up, even though its suction pressure continues to be normal.

There is no longer a liquid seal at the inlet of the liquid line, so some of the head pressure is lost into and through the liquid line, and the head pressure drops below normal. The compressor just does not pump as much gas as normally.

On this system, using an automatic expansion valve and temperature control, and which is short of refrigerant, the symptoms will be:

1. Head pressure normal to low.
2. Suction pressure normal.
3. Liquid line warmer than normal.
4. Bubbles in sight glass in liquid line.
5. Evaporator only partly active, and probably only partly frosted.
6. Operating periods longer than normal; with operation finally becoming continuous.
7. Refrigerator temperatures above normal.

The service engineer called on the job, quickly recognizes the symptoms and diagnoses the trouble as due to lack of refrigerant. However, he knew that the system had been working satisfactorily previously, so he concludes that it must have a leak.

LOCATING AND REPAIRING LEAK AND ADDING CHARGE

This immediately presents him with three duties:

(1) Find the leak or leaks. There *must* be a leak and he should not give up until he finds at least one leak. Even then, he should continue to test the rest of the system, for there may be another leak, perhaps more than one other.

(2) Repair the leak. Whatever he has to do in order to repair the leak, he must do it. Even if it is difficult to get to and to repair, he should do it. It is extremely rare that there is a case in which it does not pay to fix the leak.

(3) Add enough charge of the right refrigerant, so that the receiver supplies liquid to the liquid line at all times. It is possible that just after the compressor starts, at the beginning of the running cycle, there may be enough charge in the system to seal the liquid line, but that after the machine has run a while and the evaporator is colder, this amount of refrigerant, due to change in density, may not be quite enough to seal the liquid line.

Variation in the amount of oil in the receiver will also contribute to changes in liquid level in the receiver. So there should be a little surplus refrigerant in the receiver to act as reserve against fluctuations in the aount of liquid required.

Some people like to keep a large reserve of liquid in the receiver, so that if a leak occurs and some refrigerant is lost, it will not cause trouble at once, for the machine will continue to operate successfully. This practice is of questionable value however; for it merely prolongs the time when repairs will be required, and in the meantime more refrigerant is lost.

So it is most economical to carry no more reserve refrigerant in the receiver than is necessary to allow for fluctuations in liquid refrigerant level in the receiver.

(To Be Continued)

Declares Dividend

ST. JOSEPH, Mich. — Directors of Whirlpool Corp. declared the regular quarterly cash dividends of 85 cents per share on the 4¼% cumulative convertible preferred stock and 35 cents per share on the common stock outstanding, it was announced.

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VAPCO CLEANER, PREVENTIVE, SLIME-X and ICE MACHINE CLEANER

NEW KMP MOISTURE MAGNET
MOLECULAR SIEVE DRIER
FINEST REFRIGERANT DRIER MADE

19 TIMES AS EFFICIENT

Molecular sieves, the newest class of adsorbents, are the most efficient desiccants on the market . . . have the ability to adsorb at high temperatures up to 19 times more water.
- Eliminate acid corrosion
- No capacity loss due to oil adsorption
- Minimum of pressure drop
- Greater reserve capacity

SMALL IN SIZE . . . ONLY FIVE SIZES HANDLE ¼ TO 10 TONS

A standard drier can be reduced to a fraction of its usual size with no loss in drying capacity because of greater efficiency of Molecular Sieves. Only five sizes are necessary to handle installations up to 10 tons. This means a minimum inventory and stock control.

ALL COPPER AND BRASS CONSTRUCTION WITH MONEL WIRE CLOTH FILTERS

REASONABLY PRICED

PERFORMANCE RATED

KMP Moisture Magnets are tested and rated in accordance with ARI STANDARD 710

WRITE for full information. Inquiries welcomed.

KMP KENMORE MACHINE PRODUCTS, INC.
LYONS, NEW YORK

We're Specialists In
Refrigeration
Air Conditioning
Electric Motors, Too!

PARTS and SUPPLIES

Over 10,000 items...most complete list in the world... carried in stock! You'll find them all in the NEW Harry Alter Dependabook No. 167 for Fall-Winter, 1957-58.

Write on your letterhead for the DEPENDABOOK

SAVE MONEY, time, effort by ordering from this complete catalog.
WHOLESALE ONLY

The HARRY ALTER CO., Inc.
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New York 13, N. Y. 134 Lafayette St.
Dallas 7, Tex. 122 Parkhouse St.
Atlanta 10, Ga. 690 Stewart Ave., S.W.
FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG HOUSES

For more information about products advertised on this page use Information Center, page 20.

ASA Warns of Carbon Tet Dangers; Standard Sets Maximum Concentration

NEW YORK CITY — The maximum acceptable concentration of carbon tetrachloride in the air of working spaces shall be 25 parts per million, according to a new standard announced by the American Standards Association.

This is considerably less concentration than can be detected by smell, for the odor is not detected by most persons at less than 70 ppm, according to the standard.

The maximum acceptable concentration is defined as the maximum allowable for the protection of the health of those who work with it.

The standard is labeled Z37.17-1957.

It warns that high concentrations of carbon tetrachloride "have narcotic properties similar to chloroform. Symptoms such as nausea, vomiting, and headache are experienced by some people at low concentrations of the chemical.

"Liver and kidney damage may be produced by exposures which produce little or no symptomatic disturbances during exposure," the standard pointed out.

Depending on the dosage and other factors, severe and possibly fatal poisoning can occur.

Prolonged and repeated contact of liquid carbon tet with the skin removes the protective fat of the surface of the skin and renders the skin dry and prone to cracking, opening the way to secondary infections, the standard said.

It warned that drinking even moderate amounts of alcohol can increase the toxicity of carbon tetrachloride considerably.

"In contact with an open flame or a hot object, as a hot electric heating plate, or in an electric short circuit, the vapors of carbon tetrachloride may form phosgene, chlorine, and hydrochloric acid, which are toxic substances.

"The irritant odor of hydrochloric acid and chlorine will give warning of such decomposition of carbon tetrachloride and should be considered as indicative of inadequate ventilation," the standard declared.

To Discuss Ice Machine Centrifugal System at NAPRE Confab, Visit ARI Show

CHICAGO—The National Association of Practical Refrigerating Engineers will hold its annual convention at the Del Prado and Sherry hotels here from Nov. 18 to 21, Nick Downs, convention chairman, has announced.

Educational sessions are scheduled for the morning hours, leaving the afternoons open to attend the Air Conditioning and Refrigeration Exposition at the International Amphitheatre, he said.

The technical sessions will cover subjects such as water conservation, industrial insulation of piping, and ammonia recirculation.

One of the most interesting sessions should be the discussion of a centrifugal system for ice machines, Downs said. This design plus other unusual features will be explained by R. S. McKee of the Pacific Fruit Express Co.

The National Association of Practical Refrigerating Engineers is an organization of engineers who maintain, operate, and service the refrigeration equipment in all types of buildings and industry. Its primary purpose is to inform, educate, and train its members.

Moeller Offers Temp Conversion Chart

RICHMOND HILL, N. Y.—A temperature conversion chart, with Fahrenheit and Centigrade temperature equivalents, is being offered engineers, students, and others having use for the pocket-size aid, by Moeller Instrument Co. here.

Reverse side of the 8½ by 3½-in. chart illustrates by animated demonstration claimed qualities of Moeller "Glass Red Reading Column." The chart can be carried in pocket or wallet or placed under glass desk tops for quick reference.

Men on the Move . . .

Norge Div., Borg-Warner Corp.—GEORGE A. LUBENOW has been named national kitchen appliance merchandiser to assist in administration of sales plans and programs for refrigerators, home freezers, built-in ranges, and gas and electric ranges. Lubenow has been divisional sales manager in charge of sales in 20 states for Gibson Refrigerator Co., division of Hupp Corp.

Controls Co. of America (Schiller Park, Ill.)—ARMIN M. ELBERT was appointed chairman of the finance committee. He was succeeded as treasurer by JOHN P. RUANE and the latter was succeeded as controller by ERNEST A. WEBERLING, asstant controller.

Wolverine Tube, Div. of Calumet & Hecla, Inc.—ROBERT ALLAN has been appointed sales representative in Grand Rapids, Mich. and surrounding area, replacing S. C. SEEKELL. Allan was formerly sales representative in Kansas City, Mo. GEORGE F. WALLACE was named sales representative in northern Texas and Oklahoma. Previously with National Supply Corp., he will headquarter in Dallas.

Trane Co. — ROBERT W. THOMAS, a member of the Los Angeles office, has been promoted to manager of the New York City office.

Sweden Freezer Mfg. Co. (Seattle)—Appointment of WILLIAM W. BLAKELY as Rocky Mountain division area manager in Denver has been announced. He was formerly general sales manager for Wright Engineering & Supply Co. there.

Heating & Air Conditioning Div., National-U. S. Radiator Corp.—Appointment of THEODORE J. WILLIAMS, secretary to the Management Advisory Committee, as manager of the Indianapolis branch has been announced.

Long Mfg. Div., Borg-Warner Corp. (Detroit) — Three appointments realigning management responsibilities have been announced. DANIEL W. LYSETT, sales manager, has been promoted to director of sales. W. E. ROWE, manufacturing manager, has been upped to director of manufacturing. W. F. S. DOWLING, tooling consultant, was elevated to technical assistant to the president.

Air Conditioning Div., Westinghouse Electric Corp.—W. D. WAGGONER has been named sales engineer for northern California with headquarters in San Francisco. He has been working on distribution development.

Minneapolis-Honeywell Regulator Co.—GEORGE W. HOFFMEISTER has been named general superintendent of the new Fall River, Mass. plant. He previously was superintendent of assembly operations in Philadelphia.

Capac Industries, Inc. (Capac, Mich.)—JAMES R. DAVIDSON, formerly executive secretary of the Society of Plastics Engineers, Inc., was appointed vice president and general sales manager of the firm, which has decided to diversify further into the fields of extruding, forming, molding, fabricating, and finishing of thermosetting and thermoplastics products.

Sporlan Valve Co.—J. D. BOING, formerly with a St. Louis manufacturing concern, has been named to the home office sales department.

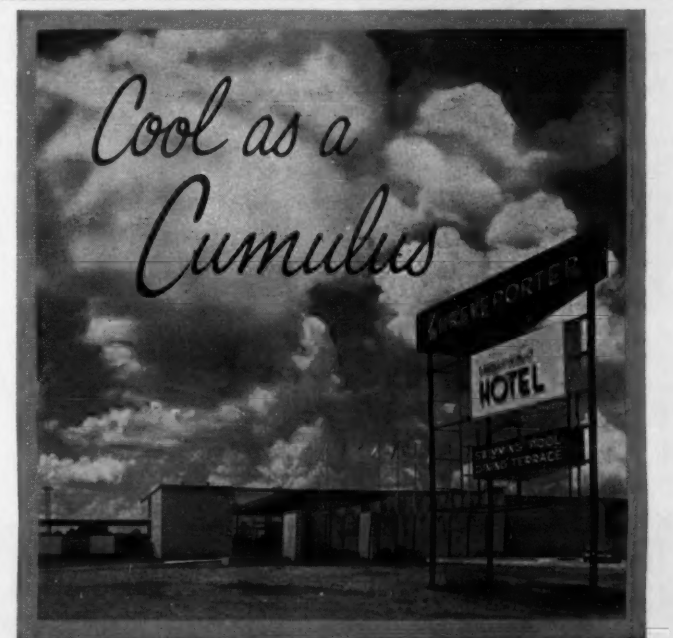
Spencer Thermostat Div., Metals & Controls Corp.—I. EUGENE SLAWSON, with the firm for three years, has been appointed field engineer in the western Michigan part of Detroit district.

Worthington Corp.—Several promotions in the marketing division have been announced. WILLIAM C. CHEEK has been appointed midwest region sales manager. JOHN H. LOOMIS replaces Cheek as Chicago district office manager. He was formerly St. Louis district manager. HOLLIS H. WISE, resident general line salesman in Indianapolis, has taken over the St. Louis post.

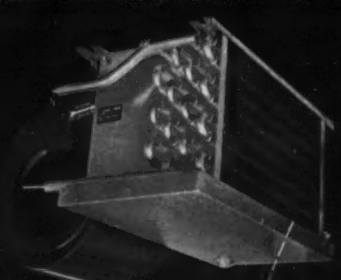
Dunham-Bush, Inc. — PRIMO BORDIGNON, previously associated with E. R. Gritschke & Associates, has been named sales engineer for the south Chicago territory.

McQuay, Inc. — RICHARD S. VINSANT, Little Rock, Ark., formerly associated with Hurston-Conaway Co., McQuay representative in Memphis, has been appointed Arkansas heating and air conditioning products representative.

Lonergan-Coolerator Div., McGraw-Edison Co.—ARTHUR ETES, who was affiliated with O. A. Sutton Corp., has been named eastern regional manager. JOSEPH PATZSCH, formerly Memphis sales representative, has been named southeastern regional manager.



Quiet Beyond Belief!



d-h AIR CONDITIONING

Says: Jack Tullos, President-Manager of the eye-filling new Shreveporter Highway Hotel . . .

- "Quite a saving in initial and operating costs!"
- "Periodic filter change our only maintenance."

Drayer-Hanson can cite similar case histories, world-wide: big jobs or small; new or old construction; residential, commercial, industrial . . .

Request SPOTAIRE literature

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DIVISION OF NATIONAL-U.S. RADIATOR CORP
3301 MEDFORD STREET
LOS ANGELES 63, CALIFORNIA
CABLE: FORTRADE

Specify FURNAS ELECTRIC CONTROLS FOR AIR CONDITIONING AND REFRIGERATION

Objectionable voltage drops are eliminated by using Furnas Electric Increment Starters for Part Winding motor applications. These starters have won particular acceptance for the larger horsepower air conditioning and refrigeration units.

Increment starting incorporates the advantages of other types of step starting AT THE LOWEST COST IN THE SMALLEST SPACE. Select the size you need: 10, 20*, 30, 40*, and 60 hp, 220 volts. There are no expensive auto transformers or resistors.

*Major savings with these "in-between" sizes.

For information on our complete line of air conditioning and refrigeration controls, write for Bulletin 5519. Furnas Electric Company, 1111 McKee Street, Batavia, Illinois. A21

FURNAS ELECTRIC COMPANY
BATAVIA, ILLINOIS
SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

Announcing

THE NEWS 4 POINT PLAN

FOR PROMOTION OF THE 10th EXPOSITION OF THE AIR CONDITIONING & REFRIGERATION INDUSTRY

October 28 is "First-of-Four" Show Promotion Issues.

This year, the NEWS has geared to help you get the best possible results from the 10th Industry Exposition. Again this year, not one but *three* pre-show issues will help promote interest and attendance at the show; three issues will be available to help you pre-sell your prospects, remind them of your booth number, invite them to visit. And—the traditional show issue will remind them of your exhibit and act as a handy reference guide on where to go, what to see. Be sure to reserve enough space to tell your whole story in at least one of the show promotion issues.

The NEWS four-point issue dates:

1	OCTOBER 28	Pre-Show Issue . . . special emphasis on Commercial Refrigeration
2	NOVEMBER 4	Pre-Show Issue . . . will feature Air Conditioning
3	NOVEMBER 11	Pre-Show Issue . . . all about Parts and Supplies and the OEM market
4	NOVEMBER 18	Show Issue . . . big, fact-packed Show Issue

Last forms close 12 days preceding date of issue.

Take Advantage of these Special NEWS Merchandising Services.

1. Extra copies of the NEWS issue in which your advertisement appears can be sent to your select customers and prospects. A special bargain price is available for any of the four promotion issues—only twenty cents per copy.
2. Reprints of your advertisement are available at cost. Simply ask your NEWS representative or write to the NEWS Merchandising Department for a quotation.
3. Additional merchandising services are available upon request. Your local representative has complete details. But to be sure that you have your complete program in time for the show, please contact him well in advance.

Join with the NEWS to Help Break Attendance Records.

Your success at the show depends upon the attendance from November 18 through 21. The NEWS four-point promotion plan is helping to build this into the biggest exposition ever.

With three big pre-show issues, everyone in the industry will know the news about the 10th Exposition well in advance. The NEWS will combine publicity, advertisements, and editorial columns to encourage attendance.

Your participation in one or more of these pre-show issues—and of course the big Show Issue—will make your customers and prospects aware of the products you intend to exhibit. You can help encourage attendance and help yourself to more results by making sure that you get the maximum activity.

The pre-show issues are timed to hit your market at the high point of buyer interest: October 28, November 4, November 11. So make your reservations now to be in one or all.

Special Show Issue Distributed at the Show.

Most important of all—be sure your advertisement in the Show Issue tells your whole story. Your customers and prospects will want to know where you are and what you are exhibiting.

After the Show, they'll refer to the Show Issue for those products which are on their "must investigate" list. Send your space reservation now.

AIR CONDITIONING & REFRIGERATION NEWS

The Newspaper of the Industry

450 WEST FORT STREET • DETROIT 26, MICHIGAN

The newspaper that carries more advertising by far than any other publication in the field.

NEW YORK, 521 FIFTH AVE.,
MURRAY HILL 2-1928-9,
ROBERT M. PRICE.

CHICAGO, 134 S. LA SALLE ST.,
FRANKLIN 2-8093,
AL SCHILDHAMMER.

LOS ANGELES, 4710 CRENSHAW BLVD.,
AXMINSTER 2-9501,
JUSTIN HANNON.

DETROIT, 450 W. FORT ST.,
WOODWARD 2-0924,
JOE SULLIVAN.

Seek To Better Frozen Food Handling-

(Concluded from Page 1, Col. 4)

it can be eliminated."

The Task Force has two objectives: (1) To impress upon all handlers of frozen foods the downgrading effects which exposure to temperatures above zero have upon the products; and (2) to inform and educate, by every means available, on proper handling methods.

The NAFFP started the program after release by the Western Utilization Research Branch of the U. S. Dept. of Agriculture of a report on the effects of poor handling on the color, flavor, texture, and nutritional value of frozen foods.

President Doughty issued an invitation to Frank D. Arn, merchandising director, Florida Citrus Commission; Dr. M. J. Coply, director, Western Utilization Research & Development Div., USDA; William Dalton, executive vice president, National Association of Refrigerated Warehouses; H. C. Diehl, director, The Refrigeration Research Foundation; Fred Freund, director, Traffic Dept., American Trucking Association; G. Vander Hooning, National Association of Retail Grocers; L. S. Martin, secretary-manager, NAFFP; C. E. Jackson, general manager, National Fisheries Institute; Dr. W. M. Keeler, director of research, Association of American Railroads; Curt Kornblau, director of research, Super Market Institute; Col. C. S. Lawrence, business manager, Institute of Food Technologists; L. F. Norwood, federal extension specialist, U. S. Dept. of Agriculture; H. K. Schauffler, executive director, National Frozen Food Distributors Association; G. B. Travis, vice president for merchandising, National Association of Food Chains; S. T. Shaw, vice president, Safeway Stores, Inc.

Government Contracts

SYNOPSIS OF PROPOSED PROCUREMENT

NOTICE TO SMALL FIRMS

Headquarters Oklahoma City Air Materiel Area, Tinker Air Force Base, Okla., Attn.: Depot Procurement Division, OCPLC.
AIR CONDITIONING OF LEAN-TO. Building 230, Tinker Air Force Base, Oklahoma—Job—IFB 34-601-58-101B—Bid Opening 24 Sept. 57. Plans and Specifications available on request.

ARMY

U. S. Army Engineer District, Corps of Engineers, P. O. Box 61, Tulsa, Okla.
FURNISHING AND INSTALLING APPROXIMATELY 60 TONS OF AIR CONDITIONING EQUIPMENT complete, consisting of all ductwork, air handling equipment, piping, wiring and controls, and modify electrical substation and other incidentals necessary for a complete installation, Altus Air Force Base, Altus, Okla.—Job—IFB ENG-34-066-58-2—Bid Opening about 11 Sept. 57.
REVISION TO AIR CONDITIONING SYSTEM, including relocation of thermostat elements, replacement of steam valve springs, and modifying relief and fresh-air dampers, Fort Sill, Okla.—Job—IFB ENG-34-066-58-3—Bid Opening about 11 Sept. 57.

NAVY

Navy Purchasing Office, 4th and Independence Ave., S.W., Washington, D. C. ATTN.: SPF-1A.
The following items are procured under IFB 600-297-58—Bid Opening 13 Sept. 57.
REFRIGERATOR, ELECTRIC, combination food freezer and refrigerator both in same cabinet, to be similar or equal to Westinghouse Model TFH-115 as shown in Westinghouse Catalog, 200 ea.—RANGE, ELECTRIC, SINGLE OVEN, three surface units, to be similar and equal to Westinghouse Model DH, as shown in Westinghouse Catalog, 200 ea.
Commanding Officer, Ships Parts Control Center, Mechanicsburg, Pa.
FANS, CENTRIFUGAL, fixed and portable, ventilation, Naval Shipboard MIL-F-19004(Ships) apply and various Navy Characteristic Codes apply(QPL)—10 ea.—IFB 104-99-58—Bid Opening 26 Sept. 57.
Officer In Charge, Navy Purchasing Office, 180 New Montgomery St., San Francisco, Calif.
COMPRESSOR, TWO SPEED, low pressure, in accordance with M I Spec. No. SSGN-587-513-820003—1 ea.—IFB 220-993-P4-Q—Bid Opening 23 Sept. 57.

GENERAL SERVICES ADMINISTRATION

General Services Administration, Region 4, Business Service Center, 50 Seventh St., N.E., Atlanta 23, Ga.
CENTRAL AIR CONDITIONING SYSTEM, Key West, Fla. U. S. Post Office Court House and Custom House—Job—IFB CR4-1712—Bid Opening 9-27-57.
NEW GAS BURNER for Heating Boiler and New Water Heater and Tank Calhoun, Ga. U. S. Post Office—Job—IFB CR4-1706—Bid Opening 9-10-57.
Business Service Center, General Services Administration, 620 Post Office and Courthouse, Boston 9, Mass.
RETUBING HEATING BOILER #1, etc., Portland, Maine, U. S. Post Office (new)—Job—IFB BOS-58-27—Bid Opening 9-12-57.
RETUBE HEATING BOILERS, etc., Boston, Mass. (Arlington Branch) U. S. Post Office—Job—IFB BOS-58-9—Bid Opening 9-12-57.
General Services Administration, Region 7, Business Service Center, 1114 Commerce, Dallas, Texas.
REPLACEMENT HEATING BOILER, U. S. Post Office, Harlingen, Texas—Job—IFB DC8-77—Bid Opening 9-24-57.
General Services Administration, Business Service Center, Region 3, 7th & D Sts., S.W., Washington 25, D. C.
The following items are procured under IFB FN-3H-7258-A—Bid Opening 9-24-57.
REFRIGERATION EQUIPMENT. 1 lot—ICE CRUSHER, 1 ea.

U. S. ATOMIC ENERGY COMMISSION

U. S. Atomic Energy Commission, Oakridge, Tenn.
FILTERS, AIR CONDITIONER, PERMANENT—258 ea.—IFB 401-58-16C—Bid Opening 9-10-57.

U. S. DEPARTMENT OF COMMERCE

Chief, Supply Branch, Maritime Administration, 45 Broadway, New York 6, N. Y.
The following items are procured under IFB B2-MA-58-12—Bid Opening 9-11-57.
REFRIGERATOR FREEZER comb. 2 door upright side by side, capacity 16 cu. ft, Kelvinator Fooderama 57 or equal, 1 ea.—REFRIGERATOR 10 cu. ft. Frigidaire Super FS-101-57 or equal all 110 a.c., 1 ea.—for U. S. Merchant Marine Academy, Kings Point, N. Y.

Weather Outlook--

(Concluded from Page 1, Col. 3)

sota and most of South Dakota, then turning south through western Nebraska, eastern Wyoming, Colorado, and central New Mexico.

Below normal temperatures in the bureau's estimate will be found over most areas west of the Continental Divide as well as along the extreme northern border of the country, and in the far southeast.

Declares Dividends

WEST HARTFORD, Conn.—Dunham-Bush, Inc.'s board of directors has declared a 15-cent-a-share dividend on common stock payable Sept. 13 to holders of record Aug. 30.

In addition, a $1.25 per share dividend was voted for 5% cumulative preferred stock.

Frozen Food Show-

(Concluded from Page 1, Col. 4)

program will be tailored to that particular group.

In the afternoons, the two groups will get together for joint sessions.

On Monday morning, the food plan people will hear talks on fundamentals of food plan organization and food plan selling. On Tuesday morning, they will study food plan order assembly and delivery and customer credit and collection. On Wednesday morning, food plan follow-up will be the subject.

On Monday afternoon both groups will get together for a special session dealing with some of the important controversial aspects and newest developments in the field of meat.

The institute business meeting will take up Tuesday afternoon, followed by the annual banquet in the evening.

At the closing session Wednesday morning, conventioneers will hear William Gove, 1954's salesman of the year, talk of "I'll Swap Ya."

Quincy Sale--

(Concluded from Page 1, Col. 2)

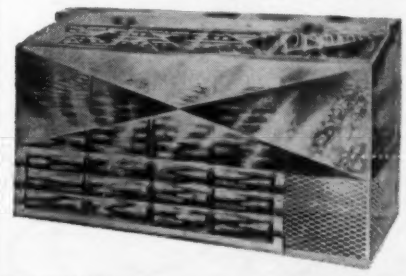
ago with the introduction and manufacture of a starting and overload relay for hermetic compressors and other motor starting and protective applications.

"It is felt that the extensive experience of Stubnitz Greene in the handling of wire and tubing will bring to the field of refrigeration in general, and to Quincy Products in particular, abilities that will be of value from the standpoint of quality, delivery, and prices," the announcement said.

"The engineering services that have been rendered by Quincy Products in relation to condensers will be extended to the application of the overload and starting relay manufactured by Stubnitz Greene.

"The combination of the resources of these two companies will enable Quincy Products to expand its activities in the refrigeration shelf field, as well as in the design, development, and manufacture of condensers."

"A CASE OF COOL JUDGMENT"

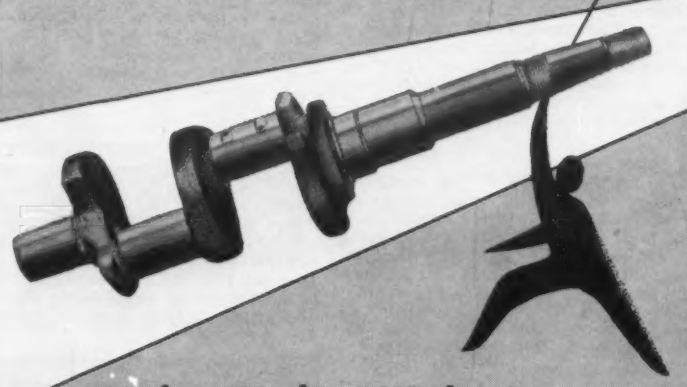


FLO-COLD DRINKMASTER
STAINLESS STEEL CUBER — COOLER.
SOLD THRU DEALERS ONLY
WRITE
United Frigurator Engrs.
MENOMINEE, MICH.
AVAILABLE IN SIZES 4 to 10 FT.

SHAFTS by MODERN

Shafts by Modern now power compressors for the leading lines of commercial refrigeration and air conditioning units. For precision SHAFTS, in quantity, consult us. Send blueprints for quotation.

SINCE 1924...



Modern Machine Works, Inc.
Pioneers in Shaft Manufacture
5354 S. KIRKWOOD AVENUE CUDAHY, WISCONSIN

SAVE $$$

100% BRASS CONSTRUCTION

WABASH HI-DRI

Lowest Priced All Brass Dryer On The Market Today

Because of improved production techniques, we make the lowest priced, quality, heavy duty all brass dryer available. *HI-DRI's* performance tops or equals that of any other dryer. *HI-DRI* has all the same qualities . . . all brass shell, PA-400 silica gel, brass outlet screens, seams silver soldered, 100% guaranteed, but . . . is *lower priced.* Increase your profits by using Wabash. Write for information *today.*

WABASH CORP.
2300 S. Western Ave.
Chicago 8, Ill.

We'll be there . . . at the 10th Exposition of Air Conditioning and Refrigeration
☆
Booth No. 201
☆
International Amphitheater
Chicago
Nov. 18-21, 1957
☆
. . . AND we'll provide FREE BUS SERVICE to and from the show
at
Hotel Sherman
Morrison Hotel
Palmer House
Conrad Hilton
Be our guest!

Marsh Testing Set

. . . with temperature scales for Freon-12 and Freon-22

The finest of testing instruments have been made still better. Pictured above are the new models of Marsh pressure and compound testing gauges . . . with two scales in color showing corresponding temperatures of Freon-12 and 22 . . . with greater pressure ranges in both gauges.

In the Compound gauge, the important retard scale has been increased to read from 0 to 80 lbs., and maximum reading is increased to 250 lbs. The range of the pressure gauge has also been increased . . . to 400 lbs.

Their precision bronze-bushed movements give them the remarkable accuracy of 1% of reading. Like their distinguished predecessors, they have the handsome, highly-polished brass cases with sparkling beveled-glass crystals. Threaded rings make it easy to remove the crystal, giving instant access to the Marsh "Recalibrator"—quickest and best way to maintain the high degree of accuracy vital to testing. Gauges are standard with ¼" N.P.T. male bottom connection with restriction screw in connection. Dial size, 2½".

No servicing kit is complete without this testing set. Write for details or *SEE YOUR JOBBER*

MARSH INSTRUMENT CO. SALES AFFILIATE OF JAS. P. MARSH CORPORATION
Dept. D, Skokie, Ill.
Marsh Instrument & Valve Co. (Canada) Ltd., 8407 103rd St., Edmonton, Alberta

MARSH Refrigeration Instruments

GAUGES • WATER REGULATING VALVES • SOLENOID VALVES • HEATING SPECIALTIES

Servicing Automobile Air Conditioners

(Vol. 2)

BY C. DALE MERICLE

The Mark IV unit is the sixth make to be discussed in the current series on automobile air conditioners. Makes previously described in this series were A.R.A., Artic-Kar, Frigette, Frigikar, and Kauffman. Several more makes by "independent" manufacturers will be reviewed in future instalments, following which units of most automobile manufacturers themselves will be described.

Models discussed in the current series are 1956 and/or 1957. For data on earlier models readers are referred to the original series of articles, which is available now in the handy manual, *Servicing Automobile Air Conditioners.*

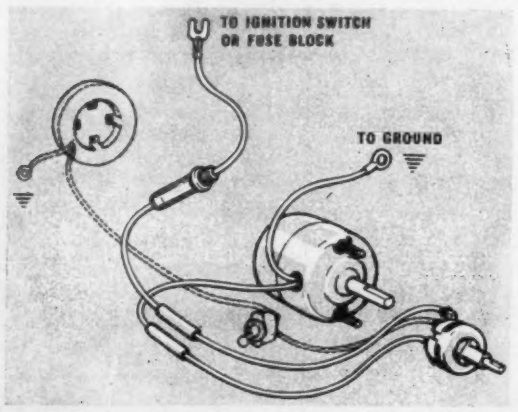


FIG. 3 shows wiring of 1956 Mark IV under-dash unit. Note optional clutch connections.

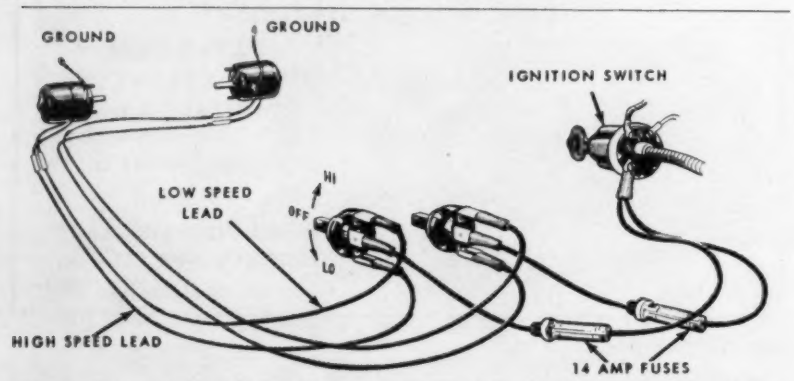


FIG. 4—Toggle type switches are employed on 1957 Mark IV units. Each lead to blower switches of trunk unit has own fuse.

MARK IV (2)

Mark IV Div.
John E. Mitchell Co.
3800 Commerce St.
Dallas, Texas

Controls

Controls of the under-dash models are mounted directly on the cooling case assembly. Trunk model controls are attached to the dash.

Rotating blower control switches are found on 1956 models, a single switch being used on under-dash models (Fig. 3), two switches providing individual control of the two blowers on trunk models. These switches have "off," "low," and "high" positions.

Blower switches on 1957 models (Fig. 4) are of the toggle lever type.

When the optional magnetic clutch is employed, this is usually controlled by an on-off toggle switch mounted on the control panel of trunk units or on the cooling case assembly of under-dash units.

Capacity control and prevention of evaporator icing is achieved on 1956 and 1957 Mark IV systems by means of the company's patented "RoboTrol" valve mounted at the suction service valve of the compressor (Figs. 1 and 5).

This is a spring-loaded modulating valve responsive to suciton pressure. A drop in suction pressure lets the spring force the valve towards the closed position, thus reducing the amount of refrigerant in circulation and thereby reducing the amount of cooling produced by the system.

This condition can prevail at high engine speeds, low ambient temperature, or when the blower is turned off.

A small by-pass opening is provided in the valve to insure oil return even when the valve is in the fully closed position.

A rise in suction temperature works against the spring, modulating the valve in the open position to allow more refrigerant to circulate.

Basic operating principle of the RoboTrol valve is the same in both 1956 and 1957 models. The 1957 RoboTrol (Fig. 6), however, has been modified to permit (1) adjustment of spring pressure in field, and (2) manual adjustment of spring pressure through a control lever on the control panel.

Latter control is accomplished by means of a vacuum line between the car engine and the inside chamber of the bellows surrounding the spring in the RoboTrol valve. The lever on the control panel controls a needle valve in this vacuum line.

The greater the vacuum on the inside of the RoboTrol bellows (control lever down), the wider open the valve will be, thus permitting greater refrigerant flow and consequently lower evaporator temperature.

Reduced vacuum on the inside of the valve bellows (control lever up) permits greater spring pressure, modulating the RoboTrol towards the closed position, thus reducing refrigerant flow and raising the evaporator temperature.

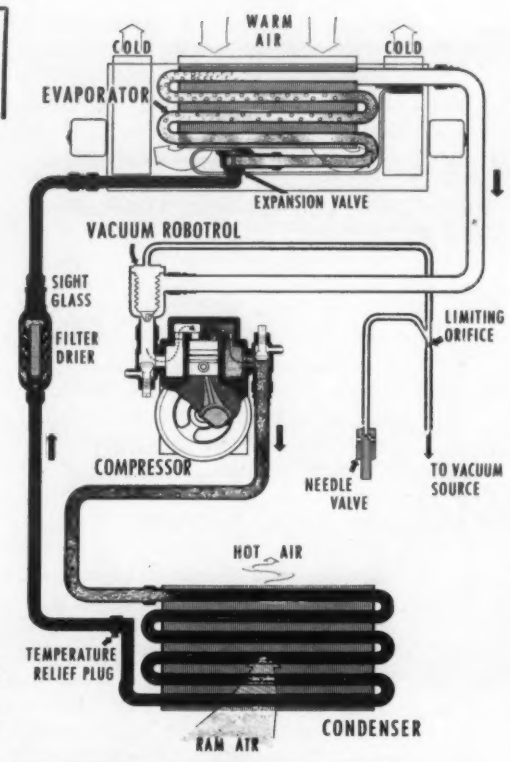


FIG. 5—Schematic of 1957 Mark IV systems shows vacuum "RoboTrol" with vacuum lines and dash control.

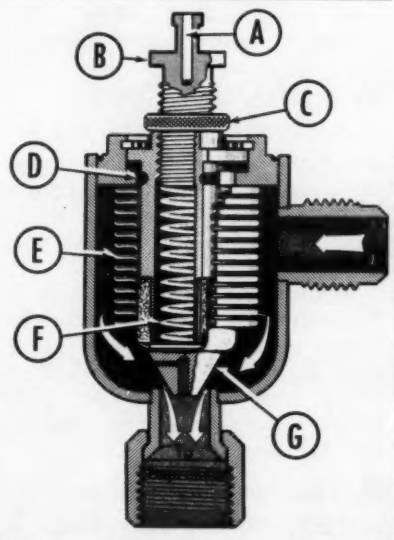


FIG. 6—Cutaway of vacuum "RoboTrol" valve. A—vacuum opening through adjusting screw. B—hex fitting on adjusting screw, C—adjusting screw locknut, D—"O" ring seal on bellows, E—bellows, F—control spring, G—conical valve with oil return.

Wiring

Leads run from car ignition switch terminal to blower controls (Figs. 3 and 4). These leads are fused, separate leads and fuses being employed for the trunk units, which have two blowers and two blower switches.

Blower motors have external ground wires.

If a magnetic clutch is employed, the manufacturer recommends that the lead to the clutch control toggle switch be taken off the blower control switch so that the clutch cannot be turned on unless the blower is on. With trunk models, the clutch control lead is usually connected to the right blower switch.

(To Be Continued)

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EMPLOYED SERVICE manager—Installation engineer 15 years' experience, refrigeration, air conditioning. Design, layout, estimating, personnel management, installation supervision. Operated own business; employed as distributor representative; contractor's service and installation manager. Seeking permanent responsible position with progressive organization with room for advancement, and salary commensurate with ability, preferably in vicinity eastern New York. BOX A5870, Air Conditioning & Refrigeration News.

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WANTED: MANUFACTURER'S agents, distributors, and dealers Midwest and Northeast for high capacity air-cooled remote air conditioning line. We can sell all equipment for 3 tons of cooling with central heat as low as $599.00. NATCO, P. O. Box 7464, Houston, Texas.

WEST COAST sales engineering organization wants long term man for southern California area. Selling components, instruments and controls to wholesalers and OEM's. Refrigeration, heating and air conditioning. Good salary and incentive supplements. Send full resume BOX 22019, Los Angeles 22. All information received held confidential.

SALES APPLICATION engineers for headquarters office of a large national manufacturer of residential, commercial, and industrial air conditioning and air handling equipment. Work involves all aspects of sales and application problems. Unlimited opportunity in all phases of the air conditioning business is available. BOX A5866, Air Conditioning & Refrigeration News.

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RESIDENTIAL HEAT pump engineer—Large eastern air conditioner manufacturer expanding residential heat pump programs—has openings in newly established engineering section for heat pump project engineers with at least 2 years' experience on residential heat pump design and 5 years on product design of air conditioners. All replies held in strict confidence. Send short resume to BOX A5872, Air Conditioning & Refrigeration News. Also openings for technical writer with approximately 2 years' experience in preparing manuals, etc. for air conditioning products.

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NOTICE: DISTRIBUTORS, dealers, servicemen, users refrigeration equipment — Repair parts available all models Baker ammonia and Freon compressors. We are exclusive Baker export sales office. Manufacturers' export agents refrigeration, air conditioning, and allied equipment. THE KEISER COMPANY, Paul Building, Utica, New York.

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MISCELLANEOUS

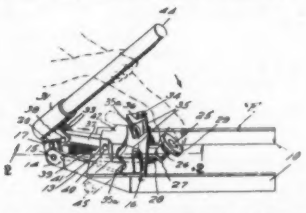
ATTENTION SERVICEMEN: Send for free circulars and bulletins on refrigeration parts and equipment. Real money saving values: WALTER W. STARR, 2833 Lincoln Avenue, Chicago 13, Illinois.

For more information about products advertised on this page use Information Center, page 20.

PATENTS

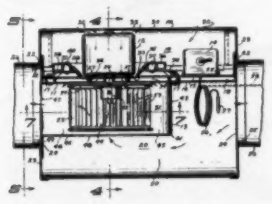
Week of July 23
(Continued)

2,800,161. ADJUSTABLE STROKE TUBE BENDING TOOL. Anthony P. Anello, Tampa, Fla. Substituted for abandoned application Serial No. 104,890, July 15, 1949. This application Sept. 24, 1956, Serial No. 611,789.



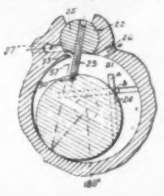
1. In a tube bender of the character stated including a base having two holding dies thereon; a pair of elongated adjusting members, pivot means supporting said members on the base in spaced relation to said dies, said members being vertically supported for rocking movement on an axis extending transversely of the base, a bending die slidably supported on the base for movement relative to the holding dies in a path perpendicular to said axis, a lever pivotally supported at one end between said adjusting members above the pivot means for swinging movement in a plane parallel to said path, a push bar pivoted at one end of said pending die, a pivot coupling between the other end of said bar and said one end of the lever at a point between the pivot support for the lever and the bending die and means operatively coupled with said adjusting members for rocking the members on said axis and for holding the adjusting members in their adjusted positions.

2,800,272. BLOWER UNIT. Laird C. McKee, Minneapolis, Minn.



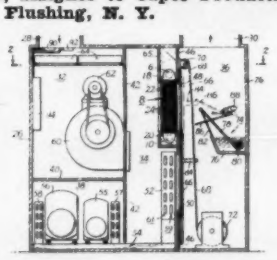
A blower unit comprising a hollow member constituted as an elongated casing and first and second transverse walls at opposite ends, respectively, of said elongated casing, there being a first opening through said first transverse wall leading to and a second opening through said second transverse wall leading from said hollow member, a platform, constituted as first and second plates in separated relation to provide an air space therebetween, supported within and dividing said hollow member into first and second compartments, a motor within said first compartment and supported upon said first plate, said motor having a drive shaft thereof extending into said second compartment, a blower housing constituted in part by said second plate and in part by a box-like member on the second plate situated in said second compartment in alined relation with said motor transversely of said elongated casing, a fan fixed upon said drive shaft for rotation within said blower housing adjacent an outlet thereof contiguous with said second opening, a third plate rotatable with and closing an interior end of said fan, there being a third opening through the first and second plates of said platform in alined relation with said motor, fan and third plate and a fourth opening through a wall of said blower housing at the side of said fan and third opening opposite said motor. . . .

2,800,274. COMPRESSORS. Vadim S. Makaroff, New York, N. Y., and Alexis E. Jackson, Norwalk, Conn.



1. A rotary compressor comprising a casing having a main cylindrical chamber, a valve chamber intersecting said main chamber and forming a pair of lips therewith, an eccentrically gyrating piston in said main chamber, an oscillating valve member in said valve chamber, a discharge port in the valve member adjacent one of the lips, a tail blade pivotally connected to said piston, said valve member having a spot in which said tail blade reciprocates, said casing having a low pressure inlet duct and a high pressure outlet duct, said inlet duct communicating with said main chamber, said discharge port being adapted to connect said high pressure duct and said main chamber at times and to disconnect said high pressure duct and said main chamber at other times as said valve member oscillates, and means constraining the gyration of said piston to thereby predetermine the amplitude of valve member oscillation and hence the amount of opening of said discharge port during connection of said high pressure duct and main chamber.

2,800,306. AIR CONDITIONING SYSTEM. Lawrence A. Freeman, Flushing, N. Y., assignor to Capco Products Co., Inc., Flushing, N. Y.



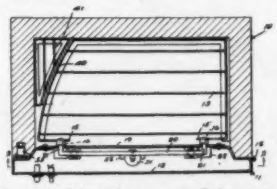
1. A unit air conditioner comprising an enclosing casing having vertical partitions forming an air inlet chamber, an intermediate plenum chamber and an air outlet chamber, a blower in the air inlet chamber for delivering air through the first partion to the next adjacent plenum chamber, said second vertical partition between the intermediate plenum chamber and the air outlet chamber having adjacent openings therein located one above the other, a heating coil having horizontal heat transfer fins overlying the upper opening, a hot water heater connected to the heating coil, a pump for circulating hot water from the heater through the heating coil, an evaporator coil having vertical heat transfer fins and overlying the lower opening in the partition wall, refrigeration apparatus in the air inlet chamber connected to deliver refrigerant to the evaporator, a vertically arranged damper mounted to slide vertically to cover the heating coil in its upper position, cover the cooling coil in its lower position and cover inversely proportional areas of the separate coils at any intermediate position. . . .

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Copies should be ordered by number and title and a mention of the fact if they are either Designs or Reissues.

Address orders for any of the above to: Commissioner of Patents, Washington 25, D. C.

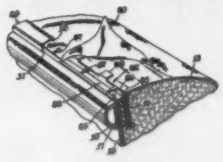
2,800,381. REFRIGERATORS. Roy E. Lewis, Atlanta, Ga.



1. In combination, a refrigerator including a hingled door, a shelf in said refrigerator, supporting means for said shelf, a pair of vertical bolts fixed to the front of said shelf, confronting pairs of keepers for said bolts, means movably mounting said keepers on said door, spring means normally urging said keepers to released position, electro-magnetic means connected with said mounting means for moving said keepers to bolt engaging position, an electric circuit connected to said electro-magnetic means, and a switch interposed in said circuit.

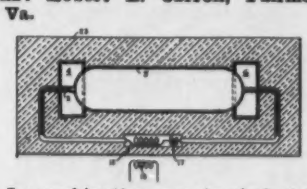
Week of July 30

2,800,742. UPHOLSTERED REFRIGERATOR CABINET. Elmer B. Derr, Oak Park, Ill., and Benton Dales and Henry C. Abrahamsen, Evansville, Ind., assignors, by mesne assignments, to Whirlpool-Seeger Corp. Original application July 15, 1952, Serial No. 298,898, now Patent No. 2,760,301, dated Aug. 28, 1956. Divided and this application Oct. 20, 1955, Serial No. 544,676.



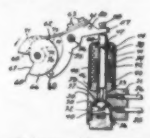
A removable sheathing assembly for a refrigerator cabinet panel having the marginal edges thereof inwardly flanged, comprising: a retainer adapted for securement to the flanged portions of the panel; said retainer having a plurality of sharply pointed barbs extending angularly therefrom; said retainer being fashioned with a plurality of tabs extending angularly therefrom in a direction opposite to that of said barbs; said retainer additionally having an angularly extending member which extends in the same direction as the barbs and is spaced therefrom; a sheathing material for covering the surface of the panel; said barbs being arranged to receive in removable relationship said sheathing material. . . .

2,800,772. ELECTRONIC HEAT PUMP. Robert L. Carroll, Fairmont, W. Va.



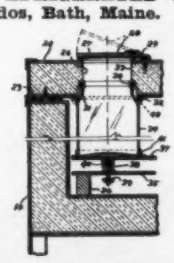
4. In combination, a pair of electrical conductors of material capable of being superconductive, at least one of said conductors being in the form of a hollow shell and having a cross-sectional area at least ten times as great as the cross-sectional area of said other conductor, the ends of said one conductor being joined to the ends of said other conductor, and direct current generating means connected intermediate the ends of one of said conductors in series therewith.

2,800,773. HOT GAS DEFROSTER CONTROL FOR REFRIGERATORS. Morris W. Crew, Milwaukee, Wis.



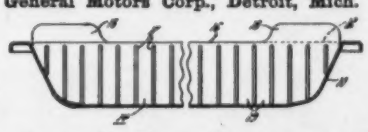
2. In a refrigeration equipment having a compressor energized by an electric motor and an electric circuit therefor, a condenser and evaporator in a refrigerant circuit including the compressor, said refrigerant circuit having a bypass whereby to directly connect the compressor with the evaporator; a normally closed valve for said bypass and an electrically operated mechanism for the opening and closing thereof, said mechanism including a cam shaft with a spring biasing cam thereon, a valve operating arm mounted for oscillation between valve opening and valve closing position, a spring connected to said arm to bias the arm toward valve opening position and aligned with the cam. . . .

2,800,774. EFRIGERATED CABINET. Louis Kondos, Bath, Maine.



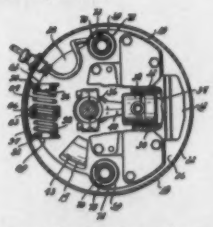
A cabinet comprising a base having an upwardly opening chamber and a laterally spaced storage compartment arranged side by side a passageway effecting communication therebetween, a refrigerator unit located in said base below said chamber and operative to refrigerate its contents, and means in said passageway for circulating air from said chamber to said compartment and subdividing said passageway to provide a conduit for air returning back to said chamber, a flat transparent top for said compartment, a hinged cover member for said chamber having a plurality of ports extending therethrough, a gasketed seat associated with each port, a cap closing each port, a shelf member in said chamber for supporting an open mouthed container below each port, and yieldable means associated with one of said members yieldably maintaining the container mouths in engagement with said seats.

2,800,775. FREEZING DEVICE. John F. O'Brien, Arthur J. Frei, and Harry O. Waag, Dayton, Ohio, assignors to General Motors Corp., Detroit, Mich.



In combination with an elongated metal tray capable of being twisted from end to end along a longitudinal axis by force applied to diagonally opposed corners thereof while ice is frozen therein, two separate identical resilient molded plastic partitioning units disposed in said tray and independently removable therefrom, said units dividing the interior of said tray into rows of narrow compartments in which water is to be frozen into separated pieces of ice. . . .

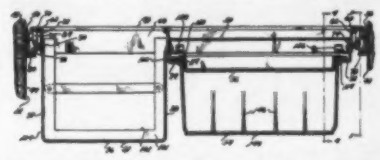
2,801,045. REFRIGERATING APPARATUS. Lawrence A. Philipp, Detroit, Mich., assignor to American Motors Corp., Detroit, Mich.



1. Refrigerating apparatus comprising a casing, a pair of vertically extending coiled springs within said casing positioned diametrically opposite each other adjacent the bottom wall of said casing and in close proximity to the side walls of said casing, a motor-compressor unit mounted within said casing on said springs, and a single horizontally extending coiled snubber spring only connected on its ends to a side wall of said casing substantially midway circumferentially on the casing between said vertically extending coiled springs and connected substantially midway between its ends to said motor-compressor unit.

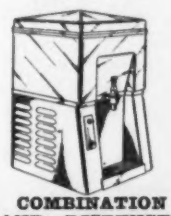
2,801,146. REFRIGERATING APPARATUS. William Mikulas, Birmingham, Mich., assignor to American Motors Corp., Detroit, Mich.

1. A refrigerator comprising in combination, a cabinet having a plurality of walls defining a food storage compartment therein, a shelf supporting rail carried by each opposed upright



side wall of said compartment, a shelf unit extending between said supporting rails for slidable support thereby, said shelf unit comprising a flat imperforate member and an adjoining receptacle joined therewith, guide rails in opposed relation carried on the underside of said flat member, a tray slidably supported on guide rails. . . .

DESIGNS



180,718. COMBINATION JUICE COOLER AND DISPENSER. Pierre Masson, Los Angeles, Calif., assignor to Dispensers, Inc., Los Angeles.

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D. C. Distributors Sell 2,272 Room Units In July

WASHINGTON, D. C.—Area distributor room air conditioner sales in July reached 2,272, substantially topping the 1,647 of the same month a year ago, the Electric Institute of Washington reported.

There have been 21,836 room air conditioner sales through July, it was noted, down from the 22,786 for the like period in 1956.

Freezer sales jumped to 873 during July, a rise over the 501 of a year ago July, while the total sales for the first seven months rose to 4,720, up from the 4,456 for the same 1956 period.

Refrigerator sales totaled 4,201 during July, a dip from the 4,388 of the same month last year. Total sales for the first seven months hit 22,696, a drop from the 25,217 a year ago.

Dehumidifier sales boomed to 638 in July, more than double the 308 sold in the like period last year and total sales through the end of the month amounted to 3,208, only slightly off the 3,229 of last year.

Cooling Unit--

(Concluded from Page 1, Col. 2)

rest." This resulted in the expense of medical attention, the petition continued.

Although the original petition protested against noise from an "air conditioning cooling tower or recirculating device" in the rear of Hanrahan's property, *The Kansas City Star* quoted the Suttons as complaining about noise from an "outdoor compressor" and further reported that Hanrahan said his air conditioner was the same kind of "waterless" system as his other next-door neighbor has.

The disturbance from the air conditioning unit will require them, the Sutton's petition asserted, to move for the protection of health if it continues. They added that the noise has reduced the value of their property.

When informed of the suit, Hanrahan said that since he had the air conditioning system installed a year ago he has always turned off the unit at 10 or 11 o'clock each night. "It has never run all night," he explained.

He pointed out that the compressor makes the normal sound that all such units do and added that "it's not any noisier than the window air conditioners used in apartments, and people in apartments put up with it."

Hanrahan stated that a neighbor whose property abuts to the rear of his has assured him the sound of the air conditioner is no bother.

He further indicated that the company that sold him the air conditioning unit will "fight out" the suit and added that "if they can stop me, they can stop anyone in the city from using an air conditioner."

Sutton--

(Concluded from Page 1, Col. 5)

This concentration, plus private brand accounts for automobile, room, and central air conditioners, it is felt, should maintain the company's normal volume, according to the report.

In commenting on the company's position, Sutton stated that sales this year will be the highest in its history. However, due to extremely bad air conditioning selling weather, the results of the company's operations will be disappointing, he added.

Sutton advised that the company would shortly announce its new and completely redesigned and re-engineered line of room air conditioners for 1958.

Nashville Area Freezer Sales Upped In July

NASHVILLE, Tenn. — Retail sales of freezers in the area served by Nashville Electric Service showed an increase with 356 being sold in July as compared with 331 for the same month a year ago and total sales for the first seven months of this year climbing to 1,530 over the 1,310 reported last year.

Refrigerator sales slumped to 750 in July as against the 1,148 for the same period in 1956 while total sales in the first half declined from 5,122 in 1956 to 4,148 this year, NES reported.

Detroit Heating Men To Hear About 'Working Together'

DETROIT — The monthly meeting of the Detroit Warm Air Heating Association, at the Fort Shelby hotel, Thursday evening, Sept. 12, will feature a talk on "We, The Contractor and Wholesaler; How We Should Work Together," given by Gordon J. Andrew, incoming president of the Central Supply Association, and president of W. T. Andrew Co.

The board of directors will meet at 5 p.m., dinner is at 6:30 p.m. (reservation necessary), and the regular meeting begins at 8 p.m.

F. C. Russell 'Interested' In Cooling Field

NEW YORK CITY — F. C. Russell, president and chairman of F. C. Russell Co., reported his firm is interested in entering the air conditioning field.

"We are negotiating now either to acquire an air conditioning manufacturing company or to contract to have units made under the Russell name," he stated.

"We are launching a big growth program," Russell declared. "I'd like to see a $50 million annual volume in four years through new products and acquisitions."

Noting that the company is in a strong cash position, with a ratio of current assets to current liabilities of about 10-to-1 and "free" cash of almost $1.5 million, Russell added that the company is in a position to acquire firms producing complementary products in the building industry.

He predicted that within the next six to eight months a firm adding between $8 and $10 million in volume would be acquired. "We are talking with several such companies now."

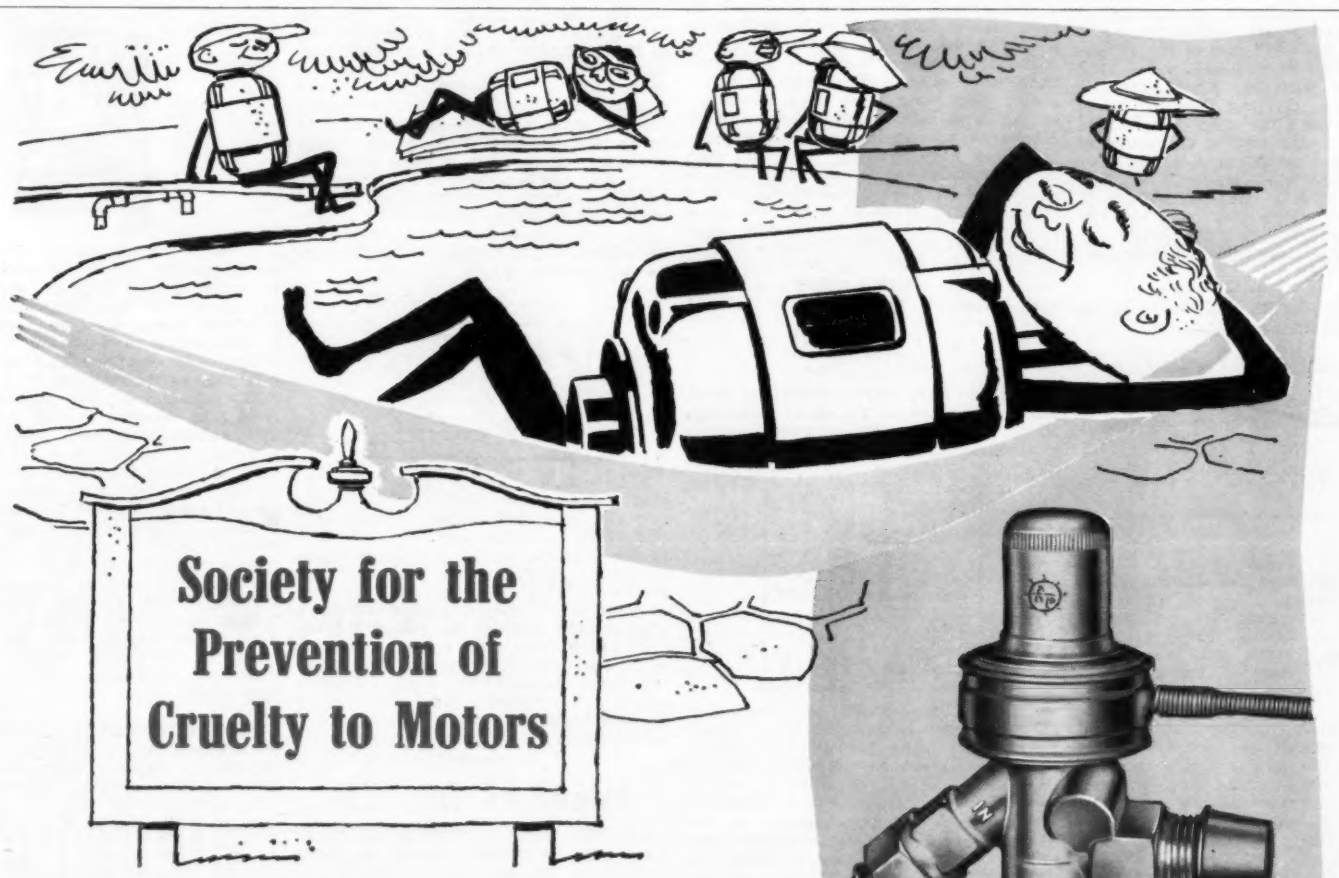
F. C. Russell Co. produces metal doors and windows.

Copper Price--

(Concluded from Page 1, Col. 2)

their price by ½ cent to 26½ cents a pound and increased the spread to 2 cents a pound below what was then the producer price.

Chase Brass & Copper Co., Revere Copper & Brass, Inc., Kennecott Wire & Cable Co., and most other makers of copper, brass, and wire products lowered their prices to conform to the 27- cent price for the refined metal named by the major producers.

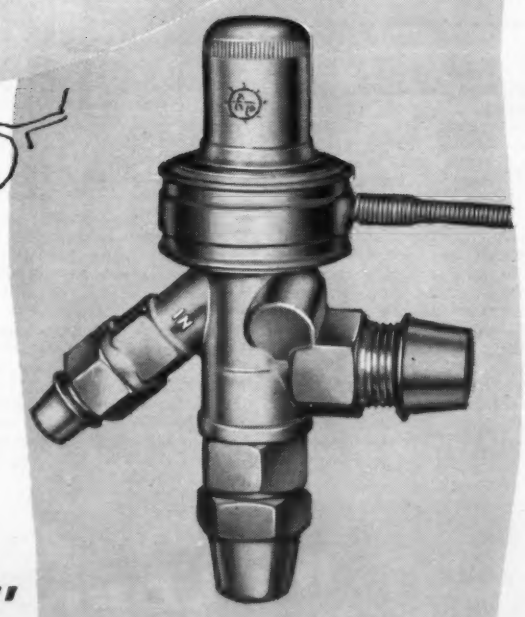


Protect equipment performance during pull down or peak loads with pressure-limiting A-P "209"

BE KIND TO MOTORS — they're your customers' best friends! Keep 'em running smooth and easy with A-P Model 209 pressure-limiting expansion valves.

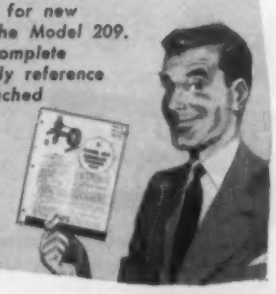
In one simple installation, you by-pass danger of operating the high side equipment above the recommended maximum pressure. There's no overload for condensing units because you *limit suction pressures to any predetermined setting from 10 to 55 lbs.* At pressure limit setting, valve functions as an automatic expansion device to provide overload protection; below the pressure limit setting, valve functions as a standard thermostatic expansion device.

Remember . . . standard liquid-charged valves provide no motor overload protection. Only the Model 209 enables you to use ONE valve for such a wide variety of refrigeration applications and conditions. You can't beat this kind of protection for insuring continued profitable customer relations!



MODEL 209 is ideal for low, medium or high temperature use . . . any superheat . . . any pressure limit. Adjustable superheat. A-P liquid charged with 60 in. capillary. Capacities: ½, 1 and 1½ tons R12; ¼, ½, 1 and 1¾ tons R22; 1, 2 and 3 tons methyl chloride. All units feature a ½ by ⅜ in. combination male flare outlet.

***WRITE TODAY** for new data sheet on the Model 209. Two pages of complete specs. and handy reference information, punched for easy filing and convenient use. Ask for Bulletin E-225.*



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